

Full Throttle

Soon to be **Flight Simulator World!**

April/May 2000

Vol. 7 No. 2

USA \$7.95

Flying with SATCO
Simulated Air Traffic
Controllers Organization

Scenery Designer
Corner
Night Lighting Textures



Round Robin
Adventure

XB-70 VALKYRIE
Cutting Edge X-Plane
From The Golden Age
of Aviation!



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SCENIC ROUTES

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Volume 7 Number 2 April - May 2000

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From the Editor



The world of PC flight simulation is changing rapidly. In just the past year we have seen simulators with new capabilities and add-on software that have made everything we used before obsolete. It is, in fact, a whole new world for FS fans.

With this in mind, *Full Throttle* magazine will be changing its name to *Flight Simulator World* to reflect our increased commitment to the expanded scope of PC flight simulation and all of the recent technology advancements. This new name better illustrates what PC flight simulation has become today and where it is heading tomorrow.

The transition to the new name will take place over the next few issues. Of course, all subscriber benefits and Web resources will remain. The transition for you, the reader, will be completely transparent.

...Full Throttle magazine will be changing its name to Flight Simulator World to reflect our increased commitment to the expanded scope of PC flight simulation and all of the recent technology advancements. This new name better illustrates what PC flight simulation has become today and where it is heading tomorrow...

What will **not** be transparent is the new color and quality of our feature articles, tutorials and product reviews. We will provide you with more resources from an even wider variety of authoritative authors, giving you well-balanced and objective analysis and useful information. We take pride in the fact that our authors always maintain their objectivity and employ their extensive knowledge of this hobby when submitting information to you, without a pre-disposed agenda.

It is our objective to provide you with the most informative and helpful knowledge we can offer. To embrace all aspects of the expanded world of flight simulation, we will provide you with even more nuts and bolts "how to" features to support your own exploration into this new world of flight simulation.

Our increased commitment to SATCO

As an example of our heightened commitment, we are beginning a regular feature on the Simulated Air Traffic Controllers Organization (SATCO), and organization giving flight simmers the opportunity to fly with real-time simulated ATC, with other flight simulator users acting as pilots and controllers over the Internet. If you are not familiar with SATCO, this will be a good thing to keep your eye on. I believe that this is where flight simulation

Pilot's Note: This information is not intended for use in actual flying situations. While the information is as realistic as possible, you should not use it for actual flying instruction. *Safe flying!*

is heading, since I don't think that any pre-programmed air traffic control and communications environment can ever replace the real thing. The interactive environment with real human beings via the Internet is the ultimate goal when simulating real-world aviation.

If you are already one of the 20,000 SATCO members, we hope to make this a continued resource to you as both the organization and the technology expands in scope.

Everything new in PC flight simulation

Since so many new simulators are available today, like FS 2000, there will be a rapid expansion in new utilities, scenery, aircraft and peripheral options available to you. Hence, for the near future you will be seeing more pages of the magazine devoted to reviews and NOTAMS on new resources available to you. This does not reflect a change in editorial policy on our part. It simply reflects the explosive growth of the commercial, shareware and freeware segments within the expanding world of flight simulation. We will not sacrifice any of our other informative features to make room for this. If we have to print more pages, we will print more pages.

We here at *Flight Simulator World/Full Throttle* magazine look forward to exploring this new world with you. It promises to be quite a ride.

Keep the blue on top!

Tim Dickens

Managing Editor

About the cover...

Matt Ridgway designed the cover for this issue.

NOTAMS - New Products 4

XB-70 Valkyrie 14

Supersonic flight is not a new concept by any means and many aircraft from the X-plane golden age are often overlooked today. The XB-70 Valkyrie is one of them. Read about the rich history of the Valkyrie - an aircraft able to sustain speeds over mach 3 (three times the speed of sound).

Flying with SATCO 20

SATCO (Simulated Air Traffic Controllers Organization) is an amazing way to fly with real-time simulated ATC, with other flight simulator users acting as pilots and controllers over the Internet. Read why over 20,000 flight simulator users have joined the free SATCO system.

Round Robin Adventure 30

This Round Robin takes place in Kansas and each airport used has significance in the flying world. Wichita Mid-Continent Airport (ICT) is where Cessna and Bombardier are located. Olathe New Century Aircenter (just southwest of Kansas City) is the former Olathe Naval Air Station, where about 70% of the US's WWII Navy pilots trained.

Scenery Designer Corner 34

In the last two issues we have outlined how to make scenery design tools work well with FS 2000. In this issue we continue the series with practical explanations and tips and tricks for creating night textures for FS 2000 scenery.

On Top Version 6.0 Reviewed 42

Choosing which IFR (Instrument Flight Rules) simulator to use has never been easy. This review looks at Aviation Supplies & Academics' (ASA) *On Top* version 6.0.

Team Alligator 46

Full Throttle takes a look at Team Alligator, a combat helicopter simulator from Simis/GT Interactive.

F/A-18 50

Full Throttle also takes a look at the latest combat simulator from Jane's, called F/A - 18 Simulator.

Airport & Scenery Designer Reviewed 56

Adam Howe presents this issue's picks of the greatest flight sim sites.

Hangsim Reviewed 61

Hangsim is a stand-alone free flight simulator for powered and un-powered gliders, paragliders and hang gliders. This version from Wilco features everything one could want in textures, flight and weather dynamics.

Product Reviews 69

Once again we'll take a close look at some of the software and add-ons you may be considering buying: *Battlechair*, *Pacific Combat Pilot*, *ACP Compact* and *Courcheval 2000 Scenery*.

Web Watch 78

Adam Howe presents this issue's picks of the greatest flight sim sites.

NOTAMS: New Products

Airport Inc.

Airport Inc. offers the opportunity to tackle every aspect of creating and running a full-size international airport. As the airport owner and manager, the player is responsible for everything from the environmental impact of the airport to the fast food franchises and lounge furniture.

Airport Inc. is a stand-alone airport simulation, and no other flight simulator program is required to operate it. The player has to choose a location for his airport, set it up, build it and manage it to become the airport they've always wanted.

As *Airport Manager*, the player will have to manage baggage handling, security, runway maintenance, air traffic control, merchandise outlets, fast food restaurants, car parks, local environmental issues and the dozens of other elements that will affect the success of your airport. Can you develop a small airport into the largest international hub?

Features include:

- Deal with emergency landings.
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- Provide connecting road & rail links; build car parks, taxi stands and train stations.
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- High-resolution, real-time graphics.
- Accurate weather conditions per location.



For More Information

Interactive Associates (CDC) Ltd.
Units A2/A3 Edison Road, St. Ives,
Cambridgeshire PE17 4LF, UK.
Internet: www.flightsim.co.uk
Phone: +44 (0)1480 462748
Fax: +44 (0)1480 463070
E-mail: mail@theassociates.co.uk

For those of you who aren't familiar with the term, NOTAMS is an acronym for NOTices to AirMen. The U.S. Government issues NOTAMS regularly. This issue of Full Throttle includes our version of NOTAMS — an expanded new products section. It's a regular part of our magazine. The products listed are compiled from press releases and information provided by the respective authors and companies who supply the products. We've taken steps to verify the information with each author or company, but cannot be responsible for inaccurate features, specification or availability dates.

FSClouds 2000

FS 2000 Cloud enhancement

Flight One Software announces *FSClouds 2000*, for use exclusively with Microsoft *Flight Simulator 2000*. This is a completely new version written from the ground up, incorporating new technology and functions with a very unique interface.



Features include:

- Different regular and 3-D-style cloud sets
- Quick Flight feature
- Ability to package scenarios for later use or to upload to the Internet
- Ability to archive, mix and match weather files.



For More Information

Flight One Software
Phone: 877-727-4568
Internet: <http://www.flight1.com/>
E-mail: sales@flight1.com
SRP: \$34.95 U.S.

MKPINK 1.1

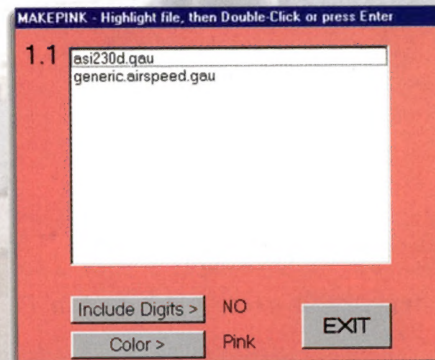
FS 2000 Back-lighting Gauge Utility

Chuck Dome is at it again.

FS 2000-style gauges now incorporate a new lighting system that backlights each gauge individually, rather than illuminating the entire bitmap as in earlier FS versions.

For More Information

Author: Chuck Dome
E-mail: chdome@worldnet.att.net
Download: <http://home.att.net/~cdf2/MKPINK11.ZIP>



Chuck's new utility for FS 2000 adds the soft pink night lighting to older gauges that were originally made for FS 98 or CFS. MKPINK is for FS 2000 only.

FlightSim Commander

Flight Planner

Users of Sascha Felix's *FlightSim Planner* will be pleased to know that he has released a new version that is compatible with FS 2000. This new version, named *FlightSim Commander*, still retains many of the same features, plus a few additions:

- Plan your flight manually or automatically
- Calculate fuel consumption and alternate airport
- Display airports, runways, taxiways and aprons
- Record and replay flight data
- Measure distances and headings
- View available airports and layouts
- Departure and arrival route (SID/STAR)
- Great Circle or rhumbline navigation
- Global Positioning System (GPS) with autopilot
- Moving map (cockpit instrument & geographic map)
- Air Traffic Control (both text and voice)
- Procedure training
- Weather control
- Real-time approach chart



Previously registered users of *FlightSim Planner* can upgrade for free.

For More Information

Author: Sascha Felix
E-mail: felix@phil.uni-passau.de
Download: <http://www.phil.uni-passau.de/linguistik/fsp/>
Shareware: \$27.00 U.S.

FS Design Studio

Next Generation Design Tool

FS 2000 has ushered in a new level of design complexities and techniques. Following that lead, Abacus Software and author Louis Sinclair have announced a revolutionary design tool that simplifies the complexities of FS 2000.

The *FS Design Studio Pro* package has a multitude of tools, powerful features and time-saving shortcuts for creating almost any kind of accurate, detailed, 3-D-textured object for FS 2000.



Created as a true 3-D "CAD" environment, FSDDS allows the flexibility and ease of design that professional designers are used to working with. Never before has an FS object/aircraft design program been as powerful and easy to use.

Offered in several versions:

- Standard version creates simple and complex 3-D objects that you can place in FS 2000.
- Pro version creates 3-D objects and allows the creation of very complex flyable aircraft designs for FS 2000.
- Commercial version for creating designs that are targeted for commercial sale.

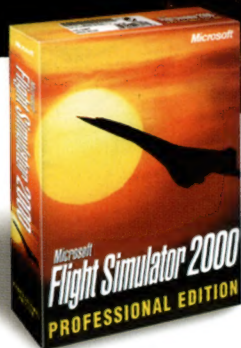
For More Information

Abacus Software
5370 52nd Street SE
Grand Rapids, MI 49512
Toll-free: 800-451-4319
Internet: <http://www.abacuspublisher.com>
SRP: \$59.95 (FS Design Studio Pro)
\$29.95 (FS Design Studio)

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Visual Aircraft Studio

FS Aircraft Painting Utility

For many years, builders of third-party Microsoft Flight Simulator aircraft have longed for an interactive paint program that would allow the user to paint or repaint the aircraft in a "real time" type of environment.

Developers Jorge Luiz da Costa Santoro and Marco Paulo da Silva have produced such a utility. The program requires the source files from the programs *Aircraft Factory 5* or *Aircraft Factory 99*



Visual Aircraft Studio offers these features:

- ➔ Direct3D support using software emulation mode or your 3-D card (HAL).
- ➔ Full mouse support to change the aircraft position in 3-D.
- ➔ The Aircraft Explorer gives you fast access to every part, component or structure of your painting.
- ➔ Animate mode lets you see your aircraft from every angle.
- ➔ Use the Navigate mode to select parts for painting, while all the others remain transparent.
- ➔ Group mode makes painting easier. Just choose the textures you want to group, and paint an entire fuselage side.
- ➔ Night illumination
- ➔ Integrated texture editor
- ➔ Demo is available

For More Information

Internet: <http://simmarket.com/online/vas/>
E-mail: vas_support@taskmail.com.br
Price: \$39.00 U.S.

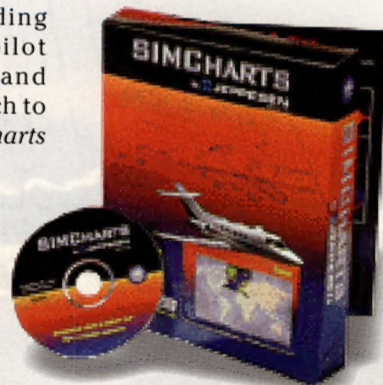
SimCharts

Patch

Jeppesen, a leading manufacturer of pilot information, supplies and charts, has released a patch to bring their popular *SimCharts* up to version 1.1.

The patch addresses the following issues:

- ➔ Increased printer compatibility—This *SimCharts* patch fixes the general protection fault (GPF) encountered by some users when printing a SimChart.
- ➔ "Recent Charts" menu item—*SimCharts* will now keep track of the 10 most recently used charts and will allow the user to quickly select any of these charts from the menu.
- ➔ Improved CD detection—*SimCharts* will now automatically detect when the user has inserted a different *SimCharts* CD and will update the list of airports as appropriate.



For More Information

Jeppesen
55 Inverness Drive East
Englewood, CO 80112
Phone: 800-621-5377
Fax: 888-271-3730
E-mail: simcharts@jeppesen.com
Free download:
http://www.jeppesenpcpilot.com/download/pcpilot/simcharts_v1.1_patch.exe

Flight Data Recorder

Many users of Microsoft Flight Simulator versions FS 95 and FS 98 have used and relied on the popular *Flight Data Recorder* that was developed by Adam Szofran.

Ignacio Hernandez-Ros has made the *Flight Data Recorder* compatible with FS 2000. The *Flight Data Recorder* saves your aircraft's flight data to a file as you fly. When enabled, the *Flight Data Recorder* saves the position, orientation and several other parameters of your aircraft to a flight data file at regular intervals. After your flight, you can analyze the flight data file with a spreadsheet program to see how well you and the aircraft performed.

Several popular freeware programs use data files created by the *Flight Data Recorder*.

For More Information

Author: Ignacio Hernandez-Ros

E-mail: ihr@mail.ddnet.es

Freeware:

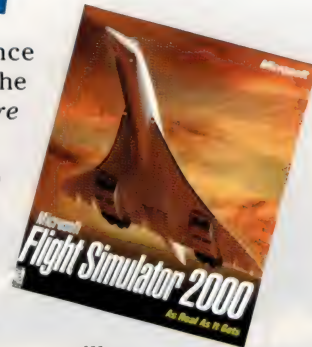
<http://ourworld.compuserve.com/homepages/ihr/FltRec70.zip>

FS 2000 SDK-I

Microsoft is pleased to announce the release of the first section of the *Flight Simulator 2000 Software Development Kit*.

The Flight Simulator 2000 Adventure Programming Language (APL) SDK contains documentation (.PDF file format) and all the necessary components for a sample adventure. This is the information you'll need to create your own adventures and lessons for *Flight Simulator 2000*.

Microsoft is planning more SDK releases that will provide information on topics such as aircraft, panels, gauges and scenery.



For More Information

Internet download and information site:

http://www.microsoft.com/games/fs2000/downloads_SDKI.htm

WBGLzip

FS 2000 .BGL compression utility

FS 2000 .BGL files use a new compression format to decrease file size and increase performance.

Microsoft released the compression/decompression utility (bglzip.exe) to the public shortly after the release of FS 2000.

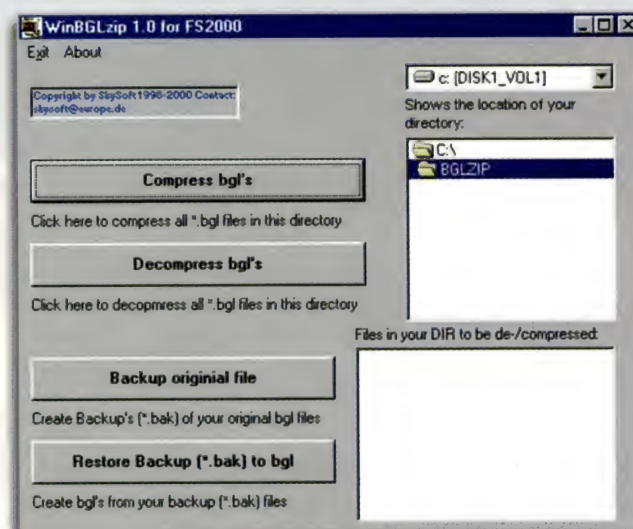
Holger Schmidt has produced a user-friendly front end for Microsoft's utility that makes compressing and decompressing FS 2000 files much easier.

For More Information

Author: Holger Schmidt

E-mail: Skysoft@europa.de

Download: <http://flightsimmers.net/skysoft/wbglzip.zip>



Elite Version 6.0

IFR Training Simulator

The ELITE Personal Simulator Prop v6 is one of the most advanced IFR simulators available for the personal computer.

ELITE is for the instrument pilot who wants to train with high-performance aircraft and advanced avionics.

ELITE's high-resolution instrument panels and precise aerodynamic flight modeling provide unparalleled detail for a superior training experience.

You can perform virtually any IFR approach in the US & Canada with the included navigation database. For beginning instrument students and professional ATPs, Personal Simulator Prop v6 provides an environment to learn, practice and maintain instrument flying skills.

New features for 6.0 include:

- Piper Archer III
- Cessna 182S
- Updated North American Navigation Database
- Improved Dynamic Weather Modelling (three wind layers with transitions between them, wind speed, direction turbulence)



- Enhanced Failure Modes
- Hot Plates—unique user-definable “pop up” displays that show any scanned picture, .BMP graphic file or text at the touch of a key. Display checklists, approach plates and even flight planning logs of your own design.
- New optional Baron 58 add-on module available



For More Information

Elite Simulation Solutions
672 N Semoran Blvd., Ste. 104
Orlando, Florida 32807
Phone: (407) 277-7803
Fax: 888-269-1120
Internet: <http://www.flyelite.com>
E-mail: elite@flyelite.com
SRP: \$699.00 U.S.

Private Pilot

General Aviation Package

Abacus Software is pleased to announce the release of the *Private Pilot* package. *Private Pilot* allows you to fly the most common and desirable planes in General Aviation today.

Aircraft included:

- | | |
|---------------------|-----------------------|
| → AeroStar 700 | → Beech V-35 |
| → Beech Baron 58 | → Cessna 152 w/floats |
| → Cessna 152 | → Cessna 172 |
| → Cessna 310 | → Diamond Katana |
| → Glassair III | → Mooney Ovation |
| → Pilatus PC-12 | → Piper Malibu |
| → Piper Saratoga II | |

Other features include:

- Individual checklist cards for each aircraft
- Guide to basic aircraft maneuvers, acronyms & more
- Chicago area sectional map
- FAA Pilot Knowledge Test Sampler
- E6B calculator—Computerized pilot tool to determine weight and balance, density altitudes and pressure patterns
- Computerized pilot tool to calculate wind correction angle
- “Be A Pilot” coupon worth \$35.00 toward an introductory flight lesson from a participating flight school. Live the dream!

SimPlates 2000 World Edition

Instrument Approach Plates

Dauntless Software has announced its companion edition to their standard SimPlates product.

Users can now have several thousand approach charts around the world.



Users of the program can print approach plates (or export them to Adobe Acrobat .PDF format) for reference during simulated flight.

SimPlates works with the following PC flight simulators:

Microsoft *Flight Simulator 95/98/2000*

Fly!

Pro Pilot / Pro Pilot 99

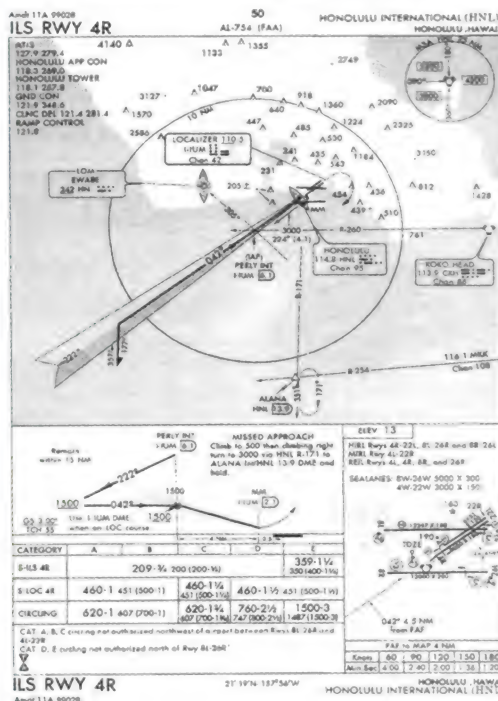
and other IFR-specific flight simulators, such as Jeppesen, Elite and ASA.

SimPlates is designed to work with Win95/98/NT/2000 and compatible platforms.



NOTAMS: New Products

NOT FOR REAL-WORLD FLIGHT
SimPlates 2000 - <http://www.dauntless-soft.com>



SimPlates 2000 - <http://www.dauntless-soft.com>

NOT FOR REAL-WORLD FLIGHT

For More Information

SimPlates 2000 World Edition

Dauntless Software

Internet: <http://www.dauntless-soft.com>

E-mail: inquiries@dauntless-soft.com

Price: \$25.00 U.S.

For More Information

Abacus Software

5370 52nd Street SE

Grand Rapids, MI 49512

Toll-free: 800-451-4319

Phone: (616) 698-0330

Fax: (616) 698-0325

Internet: <http://www.abacuspublisher.com>

SRP: \$39.95

Fly! 2K

Fly! Enhancement Package

Terminal Reality and Gathering of Developers have announced *Fly! 2K*.

FLY! 2K, not to be confused with *Fly! 2*, is an up to date version of *Fly!* with all of the major patches and online enhancements, such as support for *Roger Wilco*, the SKY! Environment Exciter and the 172 Skyhawk Instrument Flight Rules (IFR) panel.

Roger Wilco is a real-time voice chat solution for online pilots, allowing players to engage in single or multiple conversations.

The SKY! Environment Exciter produces hyper-realistic sun and clouds, detailed weather models (including ready-made weather environments or custom weather settings), accurate night lighting and enhanced graphics for runways, taxiways and airport buildings.

The 172 Skyhawk IFR instrument/cockpit panel allows simmers to fly in all weather conditions using the instruments (rather than sight) as the primary means of navigation.

Several additional enhancements complement *Fly! 2K*'s new features. An expanded global elevation database allows for more precise elevation sample points for a more realistic re-creation of real-world topography. Improved avionics documentation provides a clearer understanding of *Fly! 2K*'s functions. In addition, *Fly! 2K* also features improved product stability and additional Universal Serial Bus (USB) support.

Fly! 2K's enhancements and add-ons will be available in April via CD or by download for current, registered *Fly!* owners at the Gathering Web site (<http://www.godgames.com>) or by calling 1-877-GODGAME.

For More Information

Terminal Reality
118 Hillside Drive
Lewisville, Texas 75057
Internet: <http://www.iflytri.com>
E-mail: support@godgames.com

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The XB-70 Valkyrie

***A Cutting-edge X Plane
from the Golden Age of
Aviation***



By Jim Rhoads

With the release of Microsoft *Flight Simulator 2000*, there seems to be renewed interest in large, supersonic aircraft, particularly the Concorde. Something is magical and prestigious about being able to bend the rules of physics and break the speed of sound in a comfortable environment.

Supersonic flight is not a new concept by any means. The Bell X-1 rocket research plane, the world's first aircraft to break the "sound barrier," achieved supersonic flight on October 14, 1947. No one had ever flown a plane faster than the speed of sound before then, and many people thought it was impossible. Information for supersonic flight was not available, nor could the data from wind-tunnel experiments be trusted. This is because shock waves and *compressibility* made the aircraft highly unstable near mach 0.94. Much has happened since Chuck Yeager

pushed the X-1 past the speed of sound, and many aircraft like the Concorde are now capable of sustained supersonic flight. But many aircraft from the X-plane golden age are often overlooked today. The XB-70 Valkyrie is one of them.

The Valkyrie has a very rich history behind her. It was a much more complex aircraft than the Concorde, for example, and was able to sustain speeds over mach 3 (three times the speed of sound). The kind folks at Wright Patterson Airforce Base museum broke the seal on the door of the Valkyrie for the first time in many years to let me climb inside to tell this story.

History

The name *Valkyrie* portrays an image of a lone, valiant warrior, sleek, powerful and fit for battle. There is no better analogy between the Nordic mythological character and the United States' experimental bomber. The XB-70 Valkyrie was



XB-70 Valkyrie



developed in the late 1950s and early '60s. As I studied its rich history, I found that my mental image of this magnificent bird was true to the ancient Norse mythology and to the fate that was to befall both of them.

In Nordic mythology, the Valkyries ("Choosers of the slain") are beautiful young women armed with helmets and spears. Mounted upon winged horses, the Valkyries would scout the battlefields to choose the bravest of those who have been slain. They escorted these heroes, called the *Einherjar*, to Valhalla ("Hall of the slain"), Odin's hall. The Valkyries are also Odin's messengers. When they rode forth on their errands, their armor was believed to cause the strange flickering lights that we know as the Aurora Borealis ("Northern Lights").

Just as the Nordic Valkyries rode consistently into battle, The XB-70 Valkyrie battled within the halls of Congress and the Pentagon to accomplish her task. Although not successful for her original purpose, she continued to fulfill her mission and acquired valuable information during her valiant flights.

The Vision

The 1950s and 1960s were a time of extreme distrust between the world superpowers. The threat of nuclear war hovered over the US like an ominous black cloud. No one really knew Russia's capabilities in the nuclear race, but the United States did not want to take any chances.

General Curtis Lemay proposed the Valkyrie concept to the Pentagon as a replacement for the B-52 bomber. Lemay's proposal called for a bomber that would cruise

in excess of mach 1 (at least 1,000 mph), while sustaining a range of 6,000 miles without refueling. The idea was to produce a delivery vehicle that would be able to fly to and back from its destination without refueling, drop ordinance on its target, and fly so fast and so high that nothing could touch it. It was quite an impressive goal for the time, since we had not even effectively reached mach 2 sustained flight, let alone mach 3.

Originally dubbed the "WS-110A" (Weapons System 110A), Boeing and North American went to the drawing boards and came up with a bomber that had the following characteristics:

- ✈ Take-off weight of 1,000,000 pounds.
- ✈ A wing that would become "detachable" to allow for Mach 3 dash capability
- ✈ Required hangars that were larger than those housing the B-52

The Air Force rejected these design characteristics. Boeing and North American were sent back to rethink their designs with the following requirements:

- ✈ 7,500 mile range
- ✈ 70,000 foot cruise altitude
- ✈ 50,000 pound payload





- ✈ Must be able to accommodate the existing hangars, runways and facilities that were presently being used for the B-52
- ✈ Cruising speed of Mach 3

The Plan

After much study and work by both competitors, North American Aviation won the contract in December of 1957. North American's design made use of several unique concepts that were based on studies by two NASA scientists and tucked away as classified information. One study suggested that an aircraft could make use of the shockwave effect (caused by supersonic flight, sometimes called *compression lift* or *compressibility*) to gain efficiency and lift. By designing a splitter in the front and under the wing, the XB-70 could control the lift and drag ratios more efficiently as well.

Another unique concept in the XB-70 was the ability to lower its outer wing sections to 25 degrees between 300 knots and 1.4 mach, or to 65 degrees between 1.4 mach and mach 3. This accomplished the following:

- ✈ Total vertical area increased, allowing shorter vertical stabilizers than would otherwise be needed.
- ✈ The reduction in rearward wing area countered the delta wing's inherent rearward shift of the center of lift as speed increased, keeping drag-inducing trim corrections to a minimum.
- ✈ Compression lift was increased 30 percent because the shock wave under the wing was more effectively managed. To this date, the wingtips of the XB-70 are the largest movable surface on any aircraft.

The XB-70 also used canards, small wings near the front of the aircraft. The canards helped counteract trim changes and increased stability at high attack angles. The canard trailing edges could be lowered to 25 degrees to bring the nose up, allowing the aircraft to land at more reasonable airspeeds.

Construction of the XB-70 also provided new challenges. Typically, very high-speed aircraft relied on the use of titanium and other composite type materials, which were very costly and hard to work with. For an aircraft of the Valkyrie's size, it would have been way too expensive and too heavy to manufacture major structures of titanium on a production level. North American decided to use a fairly new technique of stainless steel honeycomb construction. The

honeycomb itself was just .02" thick, basically the equivalent of tin foil. This new method of construction produced new challenges. Trying to weld a structure this thin was almost impossible. So, North American developed a special brazing technique to assemble the fuselage panels.

The retractable nose we now see on the Concorde is not new or unique. Engineers of the XB-70 had designed a movable nose ramp in the late '50s, believing that mach 3 flight would cause extreme drag shockwaves in the windscreen area. Just like the Concorde, the XB-70's nose extends down for visibility at lower speeds and retracts at high speeds to reduce the associated drag.

Another requirement was that the cockpit be a "shirt sleeve" environment. This sounds easy enough, but at 70,000 ft and mach 3, pressures and heat provided a challenging task to accommodate this kind of environment. This was made possible by the use of high-pressure bleed air system/freon refrigeration units. The system could maintain the equivalent of 8,000' cabin pressure and temperatures between 70 and 100 degrees, which was quite a task. Even though the XB was able to accommodate this type of environment, all pilots wore regulation pressure suits. (The only exceptions are "Fitz" Fulton and "Ted" Sturmthal, the final XB-70 pilots who delivered it to its new home at Wright Patterson AFB on February 4, 1969.)

The Timing

The XB-70's conception could probably not have fallen at a worse time. In theory, the timing was perfect. But unfortunately, many of the people deciding her fate suffered from shortsightedness, a lack of knowledge and pork barrel politics. Those who did understand the purpose of the Valkyrie knew that the country needed a bomber that could fly so fast, so far and so high that nothing could touch her. It was an incredible goal, and it is not hard to understand why she was opposed by many, particularly the bean counters in Washington.

General Curtis Lemay was probably the strongest advocate of the XB-70. He knew the value of such a weapon and understood strategic concepts as well or better than anyone, having been the commander of the 305th bomb group and the XX bomber command group of World War II.

Robert McNamara, then Secretary of Defense, was against the XB-70 project almost from the beginning. McNamara believed that the country needed to shift its weapons focus to ICBMs (Inter-continental ballistic

XB-70 Valkyrie



missiles). He believed that ICBMs were more cost effective and could accomplish the same goal without endangering the lives of manned crews.

Lemay continually fought for the Valkyrie and against the unthinkable build up of a Mutual Assured Destruction (MAD) system with ICBMs. Once you launch an ICBM, how do you call it back? How do you use it as a threat or a decoy? The concept of MAD made no logical military sense and assured just as the name implied: mutual destruction.

Lemay faced several things against him and the XB-70, and they all revolved around McNamara. McNamara used to work for Lemay and did not see eye to eye with him or his direction. McNamara was known to be a very cut-and-dry, show-me-the-numbers kind of guy. This may have been good from a cost-spend approach, but it did not apply well to true military strategy. This philosophy did not fare well with Lemay and the XB-70.

The story has it that the executives of North American had arranged a meeting to have McNamara visit the plant and see the magnificent bird that was at that time (and still is) a masterpiece of aeronautical technology. McNamara got out of his car, walked around the XB-70, then got back in and drove away. It was no secret to all what the fate of the XB-70 would be.

Though originally slated for a production of 250 planes, McNamara cut the program to 13 before canceling the program completely, allowing production of only three XB-70s for experimental research.

Two were

built, but one of them was lost tragically to a mid-air collision with an F-104 during a publicity photo shoot. Pilots Joe Walker (F-104) and Carl Cross (XB-70) and both planes were lost. The loss of two great pilots and a 500 million-dollar aircraft added even more skepticism and controversy to a dying dream.

The third Valkyrie was never built. She would have been much different and even more complex than her siblings. Plans included a high-altitude observatory that would have allowed further studies of solar and other astrological events. Other plans included a recoverable booster system to launch objects into space, as well as being able to carry missiles and drones to destroy things like enemy satellites. Many other technological plans were laid for AV-3, but sadly, she was canceled on February of 1964.

My Turn

Many of my friends joke that if there is an aircraft that is almost impossible to get into, I will get into it. Well, I am not sure of that, but I do know that I have been extremely blessed by kind people who have allowed me to do just that. Maybe they just get tired of listening to me, or maybe it is my look of a six-year-old boy with a dream in his eye. Whatever the reason, I am very thankful and humbled.

The Valkyrie cockpit was only dimly lit by the museum ceiling lights. In fact, I had a hard time getting the camera setup correctly. Nevertheless, I sat on the floor between the two cockpit seats in total awe of what this beautiful bird had once done. I turned into that 6-year-old boy as I sat there dreaming and wishing that I could have been there 40 years earlier. Am I being a bit dramatic? Sure, but I was in the cockpit of a legend. Do





I really think that I could have gotten a ride in the XB-70 if I would have been born a few years sooner? I will let my friends answer that.

After my time inside the XB-70, Gwen Works Benton of the Wright-Patterson AFB took me to the Research and Archive Division. There they placed three boxes of everything that they had on the XB-70 before me. For several hours I pored over the once highly classified documents, including photographs, manuals, logs and hand-written papers. It's an awesome feeling to have material in my possession that at one time may have gotten me into *extreme* trouble.

Final

The XB-70 Valkyrie is an absolute technical masterpiece in a time that had never seen this type of speed and size. The North American engineers threw all their cards on the table and designed an aircraft that is still one of the most highly technological advancements of all time. The designers did not rely on elaborate computer-generated data, but were armed with little more than slide rules, a keen sense of mathematics, and an incredible dream. I certainly believe that the era of the '50s and '60s fostered some of the most brilliant aeronautical minds ever.

Many thanks to:

Major General Charles D. Metcalf, Director USAF Museum
Gwen Works Benton, Media Relations USAF Museum
Dave Menard, Research USAF Museum
Steve Levin, Additional Information and XB-70 enthusiast

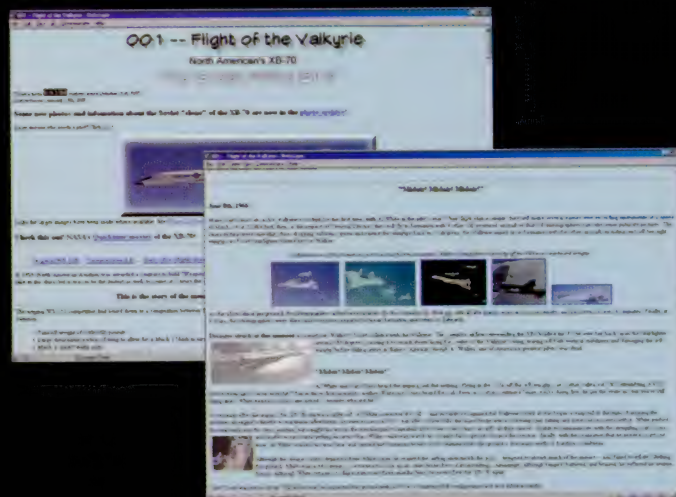
It is one thing to see this massive aircraft at Wright Patterson AFB and be captured by her beauty and size. It is quite another once you understand her rich history and the people who fought for and against her existence. Cancellation of military projects is not a new thing by any means. But the loss of the XB-70 will probably go down as one of the worst and wasteful of all time. Thankfully, much what was learned in her brief 128 flights have helped advance what we know today about large supersonic aircraft and high-altitude/high-speed research.

Just like the mythological Valkyries that proceeded against unknown odds to accomplish their task, so did the XB-70. Now quietly poised in the Wright Patterson USAF Museum in Dayton, Ohio, she still lives on in the hearts and minds of many, and she paved the way for current and future high-speed/altitude research.

Check out this site for more information on the Valkyrie

Check out the "Flight of the Valkyrie" website (<http://www.labiker.org/xb70.html>) if you're looking for more information on this classic aircraft.

This site includes several pictures, AVI movie clips, background and development information and other details of the Valkyrie.



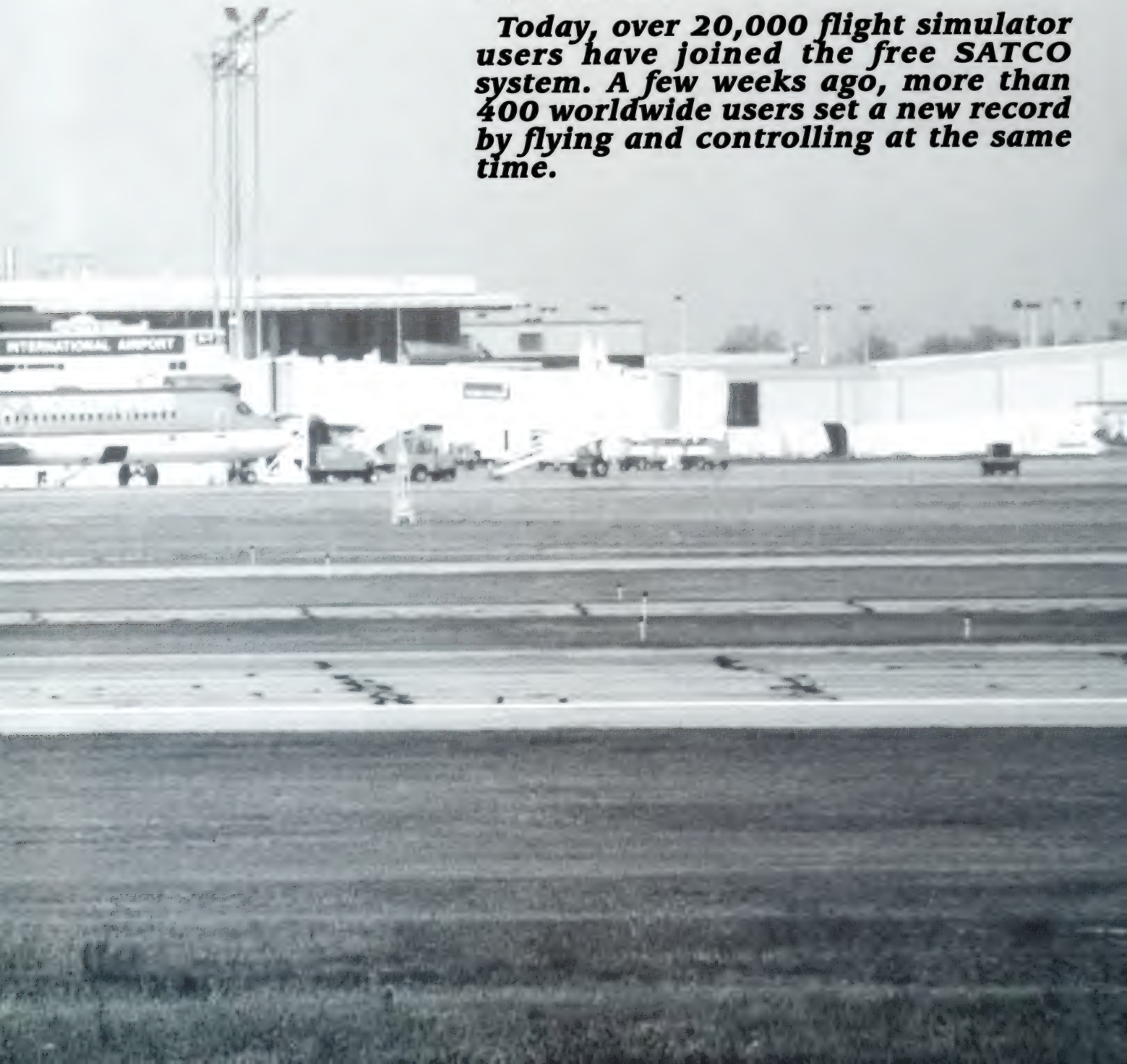
Flying with SATCO



By Doug Horton

Early last year I discovered SATCO (Simulated Air Traffic Controllers Organization). It is an amazing way to fly with real-time simulated ATC, with other flight simulator users acting as pilots and controllers over the Internet.

Today, over 20,000 flight simulator users have joined the free SATCO system. A few weeks ago, more than 400 worldwide users set a new record by flying and controlling at the same time.



This is the first of a regular column I will be writing for each issue of *Full Throttle*, and I am excited to share my enjoyment of flying with the most realistic flight simulator ATC experience I can find—flying with SATCO! This column will introduce the basics of SATCO and explain how to get started. Future columns will explore more aspects of SATCO.

I have been flying versions of Microsoft Flight Simulator (FS) for 10 years, and it started as a lonely experience. Only the very sparse dynamic scenery provided a sense of not being alone. A few years later, *Flight Simulator Flight Shop* provided simulated Air Traffic Control (ATC), with a library of voice files providing “someone to talk to.” Products such as *RealATC*, *ProFlight98* and *Radar Contact 99* significantly improved this. Although these programs offer realistic ATC simulation, they are “canned” and do not provide real-time interaction with live controllers.



What does SATCO do?

The SATCO, a volunteer association, serves as an umbrella for the most realistic ATC experience you can have with Microsoft Flight Simulator. You'll use the free *Squawkbox* program to fly as a virtual pilot. If you want to act as a controller, you'll use the free *ProController* program.

SATNET, a worldwide network of servers, links all active pilots and controllers together. Pilots file simulated flight plans, request clearances, get taxi and departure directions, get vectored along your flight path and for approach and landing. This is just like the real-

Squawkbox Update

Volunteer SATCO software programmer (and real pilot) Joe Jurecka is updating the *Squawkbox* program to include new features and to be completely compatible with FS 2000. Three principal updates are being programmed and tested.

Multi-player Update Rate: Because there is Internet lag time in updating other multi-player aircraft positions, some users see other aircraft jump around on their screen. Consequently, the update rate for getting data on other aircraft positions will be changed from every five seconds to every one second. This should smooth out the motion of other multi-player aircraft. However, initial experiments with voice indicate that the extra messaging induced by the faster multi-player updates in congested areas (such as KORD) tend to decrease voice intelligibility. If further tests show an incompatibility with voice communications, the faster update feature may not be included in the next update.

Common Shape Library (CSL): The Common Shape Library (CSL) has been produced by SATCO members in New Zealand because a pilot's view of other aircraft is limited to the aircraft in that user's Aircraft folder. This will enable all SATCO pilots to see the correct images of each others' aircraft. Here are some details:

- ➔ The library currently includes over 70 different aircraft images, and when installed, a CSL folder will be added to each user's Aircraft folder.
- ➔ The CSL folder will contain individual folders for each added aircraft shape. Each of these folders will contain just the *.MDL and Model.CFG for each aircraft, so they can't be flown.
- ➔ Each user will select one of these aircraft in a new drop-down list in the *Squawkbox* flight plan filing form.
- ➔ The image of an aircraft seen by other multi-player users who have CSL aircraft will be selected in the flight plan from the CSL list.
- ➔ A feature of *Squawkbox* should mask the CSL aircraft from showing up in the Aircraft selection dialog box list if *Squawkbox* is not running, thereby not adding to the time it takes for the Aircraft dialog box to appear when selecting aircraft to be flown.

Voice Integration: Finally, a workable and seamless voice solution will be provided in the next *Squawkbox* update. This feature will integrate the *RogerWilco* voice program, by Resounding Technology, Inc., into both *Squawkbox* and *ProController*, so all SATCO users can communicate by voice instead of chat box. This is great news because *RogerWilco* is free, while many other voice programs are not. With integration into *Squawkbox*, users will not have to start *RogerWilco* separately. More significantly, selection of the sound channel (“room” in Internet terminology) will be done automatically as each *Squawkbox* user double-clicks a new controller frequency in the ATC selection list. Before the upgrade, users must change frequencies in *Squawkbox*, then go to the separate *RogerWilco* interface to change voice channels.



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*...SATCO, a volunteer association,
 serves as an umbrella for the most
 realistic ATC experience you can
 have with Microsoft Flight
 Simulator...*

world air traffic control system. The dialog between controllers and pilots is provided by typing into a chat box or with the free *RogerWilco* voice program.

Obviously, a great deal of programming effort lies behind the SATCO system. The team effort has involved too many people to name them all, but the software authors deserve mention because without them, we would still be flying alone with canned ATC messages.

Jason Grooms originally wrote both *Squawkbox* and *ProController*. Jason now only handles *ProController*. Joe Jurecka took over *Squawkbox* and has rewritten much of the code. He is currently working on an updated

version. Marty Bochane, later joined by Phillip Dale, wrote FSD, the server software. Phillip has done much of the recent work on FSD and has plans for future enhancements. Resounding Technology, Inc. provides the *RogerWilco* program.



Flying with SATCO

Flying with SATCO provides the following adventures and features:

- ✦ Real-time, on-line, interactive ATC (Air Traffic Control) that is controlled by other flight simmers
- ✦ Real-world weather
- ✦ The ability to see other aircraft out the window using MSFS multi-player functions
- ✦ Moving map (EHSI)
- ✦ A Flight Management System (FMS) that links to the MSFS autopilot
- ✦ Traffic Collision Avoidance System (TCAS) to avoid other aircraft in a controlled environment

Since I am a pilot in the SATCO world and not a controller, this column provides information for pilots flying under SATCO with *Squawkbox*. This column is not a complete source of tutorial information. Many official tutorials and training documents are available at various SATCO-related Web sites (listed below). Rather, the column will introduce readers to the basics, provide details on how to get started and gain proficiency, and I will provide bi-monthly updates on "what's new and what's happening" with SATCO and flying with *Squawkbox*.

Where to begin?

First, it is important to become very familiar with the flight simulator aircraft you want to fly using SATCO. The lessons by Rod Muchado in the FS 2000 tutorials are an excellent way to do this. I suggest working as far through Rod's lessons as possible. It is also important to learn to navigate the aircraft, and the FS 2000 lessons teach the basics.

Users should also learn proper ATC terminology. Several relevant tutorials are on SATCO Web sites. I have been lucky to learn this another way. In my frequent business travels, United Airlines pilots usually patch their ATC communications into the airline entertainment system. So I put on a headset, tune to channel nine on the entertainment system, and I can listen to real ATC from taxi to touchdown! If you are going to fly on United, I recommend saying a quick hello into the cockpit as you enter the aircraft and politely asking the Captain if he will be putting ATC on channel nine.

I also highly recommend starting in low to medium traffic areas, being patient and willing to learn. You can also use the comment field of the *Squawkbox* flight plan to alert SATCO controllers with comments such as: "new user," "have" or "don't have" charts, "no STARs (Standard Terminal Arrival Routes)," etc. You should try to get charts and approach plates. You can ask real pilot friends to save charts when they update or look at products such as SIMCharts from Jeppesen (<http://www.jeppesenpcpilot.com>) and SIMPlates from Dauntless Software (<http://www.dauntless-soft.com>). Both these companies sell collections of charts and approach plates that are adapted to flight simulation.

As you continue reading this column, you will see many links that can be used to get more information about flying with SATCO. This is a measure of how much information is available and how this organization has grown to over 20,000 members. I also recommend visiting as many of the SATCO related sites as you can so you can read all about it! The more you learn, the more realistic your SATCO experience will

be. While future columns may add to and clarify your knowledge of SATCO topics, you don't need to wait to get started. Crank up your browser and start reading!

SATCO in Action

As an interesting starting point and to see the "big picture" of SATCO, I recommend looking at the free *WhazzUp* program. This is one of the newer add-ons for the SATCO experience, designed by veteran flight simulator programmer Enrico Schiratti. The program is available on his Web site at <http://www.schiratti.com/whazzup.html>.

WhazzUp in its most essential form is a world map that shows all operating controllers and pilots. It queries the network of SATCO servers to identify current controllers who are operating. It also determines what pilots and flights are checked into the SATCO system. These are shown on a world map that can be moved and zoomed to any area of interest. You can also use function keys to program views of particular areas. Geographic boundaries are shown for all ATC centers, and those that are operating are shown in green. Approach, Departure, Tower and Ground controllers are also annotated, and flights that are currently filed are shown as great circle arcs. This is very similar to the traffic management display of a real ATC facility.

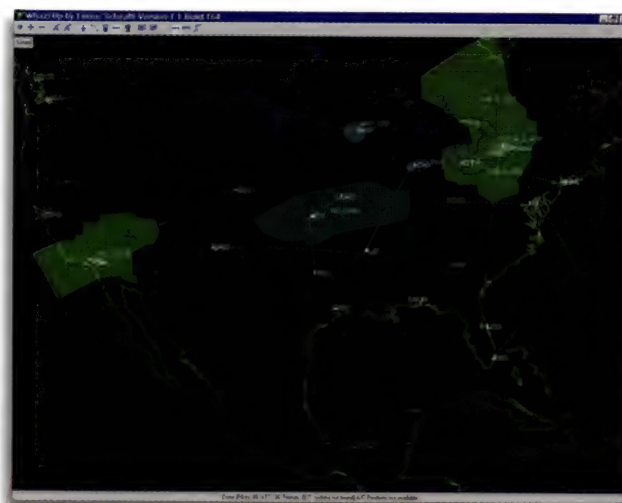


Figure 1: WhazzUp showing active ARTCCs in two shades of green and several flight paths in white. Lighter green sectors have voice available. The map is zoomed to show U.S. area.

Enrico has also programmed several innovative features into *WhazzUp*. One neat feature is a "friends list." This pop-up box lists the names of friends who are currently flying with SATCO.

SATCO Procedures

1. First, establish an Internet connection and close any e-mail programs or browsers that may have opened automatically.
2. Start *WhazzUp* or use SATCO links suggested above to choose an area with good controller coverage. In general, areas in which it is evening or a weekend will have better coverage. Alternatively, if you are just starting for the first time, you can choose an area with no coverage to learn about using *Squawkbox* components without having to be concerned with ATC terminology. Choose your departure and destination airports.
3. Start the Pathfinder dialog within *WhazzUp*, or use APLGEN or other programs, to generate a flight plan, which can be saved in the *Squawkbox* folder as a *.SBP file.
4. Start MSFS and put it into a "hosting Multi-Player session" mode, then close the first chat box that opens. You will need to enter a call sign during this sequence. (Remember, I am not providing details. Those are in the tutorials. I am just trying to provide the "big picture.")
5. Select the aircraft you wish to fly, and go to the departure airport. Slew away from whatever runway you are on to a ramp area. You will get your taxi directions and runway assignment from ATC.
6. Minimize MSFS and start *Squawkbox*. This requires several steps that must be learned from the *Squawkbox* tutorial, including entering your user ID and password.
7. Click the [F] button to open the *Squawkbox* FMS, then use the *Squawkbox* menu to load your previously saved flight plan. This will simultaneously bring the plan into the *Squawkbox* FMS and fill in the route portion of the flight plan filing form. Check everything in the flight plan form, including aircraft type, call sign, altitude, waypoints, etc. If you are just starting, use the comments area to tell controllers that you are new. They will be more patient with any mistakes you make!
8. Use the *Squawkbox* menu to connect to SATNET. You will see lines written in the gray area of the *Squawkbox* box that show the connection. Then use the *Squawkbox* menu to select Squawk Standby. This gives you a chance to catch your breath before interacting with controllers.
9. If you are ready to go, uncheck Squawk Standby, then use the *Squawkbox* menu to click on ATC Directory. This will show you what controllers can be received in the departure area you've chosen. Look for Ground, Tower, Departure, Center, in that order, and double-click the first of these available. Note the frequency that should automatically show in your Comm1 frequency box after you've double-clicked.
10. If everything is working right, you should hear an audio cue and see text in the *Squawkbox* box that acknowledge your connection.
11. Use the *Squawkbox* menu to file your flightplan. This action sends it to the controller to whom you've just connected.
12. Now you are ready to "request clearance as filed" from the controller to whom you are connected. If lots of controllers are working and you've chosen well, you will have Ground or Tower for getting started. If not, then maybe you will only have Center. One great thing about SATCO is that if the lower levels of the ATC hierarchy aren't operating, then the next higher level takes over that function. So, you might be asking for Clearance from the Center controller.
13. If necessary, you can take-off from an area without controller coverage, without Clearance, but you must then periodically check with the *Squawkbox* menu ATC Directory function to know when you enter an area with a controller that you can receive. You can also look at the *WhazzUp* screen to see controller status, and you should see your flight path and label. After you've double-clicked that controller's frequency, re-file your flightplan, then announce (by typing in the chat box, then pressing [Enter]) something like: "(Callsign) with you at (altitude) enroute (airport) as filed." The controller should then give directions.
14. All controllers and other pilots recognize that new participants join every day. It is okay to tell your controller that you are new. He/she was also new, perhaps just a few days earlier!

The ultimate feature Enrico has added, with cooperation of SATCO, is that *WhazzUp* continuously queries SATNET (SATCO's Internet domain) to determine the positions of SATCO aircraft flights. These are shown with yellow circles and labels. The labels show the aircraft's callsign, altitude, speed, departure/destination and the aircraft ID that the pilot entered on the *Squawkbox* flight plan form. Note: this feature is occasionally unavailable, as it is dependent upon the OZPACK SATCO server, which is sometimes not operating.

Where to fly with SATCO?

The question of where you want to fly is based on how much realism you wish. For maximum realism, you probably want to fly where there are abundant controllers and other aircraft. There are at least three ways to find where others are operating:

1. You can use the *WhazzUp* program.
2. You can look at SATCO's site (<http://www.satco.org>) and follow the links to SATNET, then look for the "Server List and Who Is Online" link.
3. You can click the "SATNET Composite" link on the right side of the www.avsim.com home page. You will also see a new Java-based display accessible from the SATNET ATC link that shows the status of the SATCO system for some geographic areas, currently North America, the United Kingdom and New Zealand. Remember that *WhazzUp* provides worldwide information.

For maximum realism, the first step is to use one of these three methods to pick your flight departure and destination airports. You want to go where controllers are operating for some combination of Tower, Departure and Approach, as well as Centers that span the route. *WhazzUp* shows these in list form and graphically.

Figure 1 shows a *WhazzUp* screen view that is zoomed to show the entire U.S. Note the two shades of green that show Los Angeles, Kansas City, Cleveland and Toronto Centers are active. The lighter green sectors have voice available. You can set *WhazzUp*'s updating interval, and Centers that become active during an update are displayed in a rose color until the next update.

There are many more controllers available in the evening and on weekends. I chose a slow time of day so just a few flights and centers would be active.

Of course, you may wish to start your SATCO experience by flying in an area without controllers. Again, you can use *WhazzUp* to find such an area. This way you can learn to use Microsoft Flight Simulator's

...The question of where you want to fly is based on how much realism you wish. For maximum realism, you probably want to fly where there are abundant controllers and other aircraft...

multi-player mode and all of *Squawkbox*'s features without having to interface with controllers. When you connect to the SATCO system this way, you will still need to file a flight plan to see yourself on *WhazzUp*. Then you will see your call sign on the Pilots list, and if everything works right, you will also see your flight plan arc and aircraft position on the *WhazzUp* map.

Installing Squawkbox and ProController

Next, you will need to download and install *Squawkbox*. This is available from the combined *ProController* and *Squawkbox* site: http://www.ivpa.com/vta/sb_dl.htm. Follow the installation instructions carefully.

Using Squawkbox

Before looking at the step-by-step procedures, let's look at the "big picture." The first step to using *Squawkbox* is starting Flight Simulator, then putting it into a "hosting" multi-player mode. Next, you can minimize FS, then start *Squawkbox*. After you maximize FS, you will see that *Squawkbox* opens a box in the upper left corner of your screen, as shown in Figure 2. This window can be resized as desired, but you need to balance the screen space dedicated to this window so that you can see out of your aircraft.

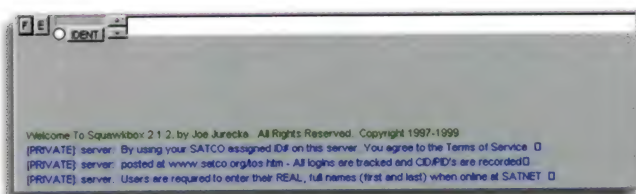


Figure 2: Squawkbox version 2.1.2 interface, just after using Connect command, showing response from the SATNET server.

The white space at the upper right of the gray area is the chat area where you type dialog with the active controllers. Dialog between you and other pilots and ATC is displayed in the gray area under the buttons. You don't have to stare at the box looking for communications from ATC to you. A bell indicates when you have incoming messages from your active controller.

The two buttons at the upper left open two significant *Squawkbox* components. A long menu is available by right-clicking the gray area of the box. The [F] button opens a Flight Management System box (see Figure 3), in which you can enter a complete flight plan. Like other FMS add-ons to MSFS, this includes a worldwide database of airports and nav aids, and it can send heading, altitude and speed inputs to the MSFS autopilot.

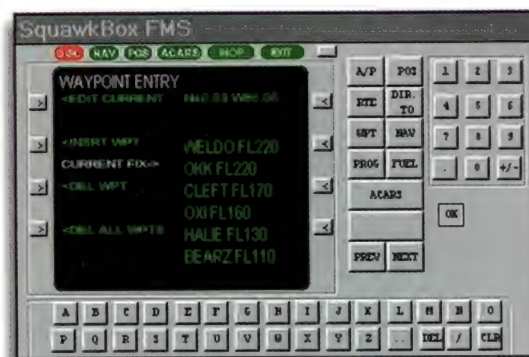


Figure 3: Squawkbox Flight Management System screen.

The [E] button opens an Electronic Horizontal Situation Indicator (EHSI) display that is both a moving map and Traffic Collision Avoidance System (TCAS). Figure 4 shows a flight plan and in-range nav aids on the changeable 80-mile scale. This box can be dragged over the navigation display of any plane with a "glass cockpit" or left where it pops up. (You will find that it needs to be dragged one border at a time.) Amazingly, it not only shows nav aids along your flight path, it also shows other aircraft in the area, including their difference in altitude from your aircraft. It is actually like a miniature version of the *ProController* screen. Pressing the NAV letters, shown in red, can toggle on the VOR frequencies, as shown.

Important Acknowledgements

- ✈ Squawkbox Manual and Tutorial by Ray F. Jones—http://www.ivpa.com/manuals/sb/sb2_manual.htm By the way, it is important to read Section 6 on FS multi-player before you work through the Section 5 tutorial. Otherwise, you will try to get things going before getting MSFS into the correct multiplayer setup.
- ✈ Several training modules from the Virtual Training Academy are at <http://www.ivpa.com/vta/>, including ground school modules.
- ✈ The tutorial on Air Traffic Control by Joe Jurecka will help with terminology (<http://www.netxn.com/~jgrooms/atc/atc.html>).
- ✈ A tutorial on ATC terminology by real pilot and SATCO controller Bryan York is posted on several Web sites in file Voice.Zip.
- ✈ ATC voice demonstration audio files from SATUK are at <http://www.satuk.org.uk/voice/training.htm>. Note that this is a 4 MB download with two MP3 files. (This file is also Voice.Zip, so beware of a conflict with Bryan York's file above.)
- ✈ Tutorial on understanding approach plates by Wayne Qualkinbush is at <http://www.geocities.com/CapeCanaveral/6912/>.

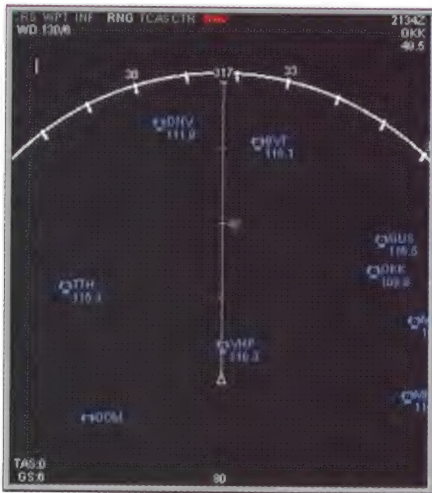


Figure 4: Squawkbox ESHI showing VORs and frequencies in Arc mode, with 80-mile range.

Figure 5 shows a programmed flight plan with a 160-mile range. In this case, you may recognize waypoints for the KOKOMO STAR for arrivals into Chicago O'Hare from the southeast.



Figure 5: Squawkbbox EHSI in Arc mode showing flight path. VORs are toggled off by pressing the NAV button at the top of the display.

Right-clicking the gray area of the *Squawkbox* dialog box opens a long menu with lots of items, but four are immediately significant.

1. The **Connect** command connects *Squawkbox* with the SATNET server system.
2. **Squawk Standby** leaves you connected but not showing up on *ProController* screens. This is useful after you connect while you are making final preparations.

3. If you use the menu to click on ATC functions, you will see a File Flight Plan command. This brings up the flight plan filing form, as shown in Figure 6.
4. The bottom section is a list of customizable ATC requests and responses that can be selected and automatically placed in the *Squawkbox* chat box. The best way to learn these is to click on all menu and sub-menu items to see what is available.

You will see that the first few waypoints in the plan match those shown on the FMS in Figure 3. That's because I loaded a *Squawkbox* flight plan that I exported from the free *Nav 3.0* flight planner by Ted Wright. What's neat about this is that when you load a stored flight plan into the FMS, it automatically goes into the flight plan form.

Flight Plan

International Simulated Civil Aviation Organization
 FLIGHT PLAN

OK
 Cancel

☐ VFR
☒ IFR
☐ SVFR

Aircraft Ident: **DH142** Aircraft Type: **T4E4R/F** True Airspeed: **300** Departure Point: **KIND** Dep Time Est: **1440** Dep Time Act: **1501** Cruise Altitude: **FL220**

KIND WELDO OKK. CLEFT D01 HALIE BEARZ KORD

Destination: **KORD** Time Enroute: **1** Hours **0** Minutes Remarks: **NEW SATCO PILOT**

Fuel on Board: **3** Hours **0** Minutes Alternate Airport: **KMDW** Pilot Name / Home base: **JOHN DOE/KORD** Number Aboard: **4**

Not to be used for Real World Flight Planning

Figure 6: Flight plan filing form filled out and ready to file. Note that waypoints match those in the FMS in Figure 3.

Squawkbox and SATNET tie into worldwide weather reports, so real-time, real-world weather is continuously loaded into FS as you fly. This is better than using FS 2000's Real Weather feature, which only drives weather into the flight simulator from one weather file and does not update as you fly.

While conceptually simple, there is a lot to learn about all the *Squawkbox* features. I recommend studying a great tutorial about the *Squawkbox* EHSI and FMS, with lots of graphics, that was written by Michael Lans, available at <http://www.thecousins.com/Michael/KIND/fms.htm>.

Getting Registered with SATCO?

Ready to get started? To participate as a pilot, you will need to register (free) with the International Virtual Pilots Association (IVPA), sister organization of SATCO. You can find IVPA at <http://www.ivpa.com/index.htm>.



GIVE THEM SOMETHING TO LOOK UP TO

To children in countries such as Honduras, balanced diets, yearly check-ups and elementary schools are unknown. Using airplanes, volunteer organizations can provide these necessities. For more than 30 years, *Wings of Hope*, a non-profit organization has helped provide airplanes

for humanitarian services. If you are not using your airplane, engines, radios and other equipment, we can. If you'd like to make a cash donation, we can use that, too. Your donation is tax-deductible. Turn your wings into *Wings of Hope*.

**WINGS
OF HOPE**^{inc.}

Spirit of St. Louis Airport

18590 Edison Avenue, Chesterfield Missouri 63005, USA
1-314-537-1302

Within a day or so, you will receive by e-mail a pilot identification number (PID) and password that you will need for logging onto SATNET with *Squawkbox*. While you are waiting, you can read the *Squawkbox* manual and several interesting tutorials highlighted below. (Make special note of the fifth tutorial, which links to ATC voice-training audio files from SATUK.)

The SATCO homepage, <http://www.satco.org>, also provides links to policies, the FAA controller manual, a collection of sample flight plans and other documents. Real Miami Center Air Traffic Controller Jay Marin provides another great service on his Clearance Unlimited site at <http://www.clearanceunlimited.com/>. Jay provides a large database of navigation material for flight simulator pilots, including flight plans, though you will need to program them into *Squawkbox* manually.

Detailed Procedures for Microsoft Flight Simulator and SATCO

Even though I strongly urge you to read all the available tutorials before beginning, Figure 7 contains a slightly more detailed sequence of how it all works. Learning the complete details requires study and practice, but you will be amazed how realistic it is, and you may use "canned" ATC add-ons more for training than for realism.

Does this look complicated? It's really not, provided the steps are done in sequence. It just takes some study and practice to change over to the most realistic real-world flight experience you can get in PC flight simulation.

Future SATCO Articles

In our next installment, we will explore more details of *WhazzUp*, flight planning for SATCO flights and voice operation of *Squawkbox* with SATCO.

As I indicated earlier, I will only be covering the pilot portion of the SATCO system. If you want to be a controller, you can start by following the links on the SATCO home page. You will need to master the *ProController* program, learn about ATC from a controller's viewpoint, and take a test to be approved as a SATCO controller.

A whole new world of flight simulator realism and enjoyment is available thanks to a great many talented, hard working and generous people. Learning to fly with the system requires study and practice, but so does real-world flying! The greater your desired realism, the greater your need to learn what real pilots and controllers do.

See you in the air with SATCO!

Round Robin Adventure

Adventure through Kansas

This Round Robin takes place in Kansas, part of the heartland of America. The airports used in this article each have significance in the flying world. Wichita Mid-Continent Airport (ICT) is where Cessna and Bombardier are located. Olathe New Century Aircenter (just southwest of Kansas City) is the former Olathe Naval Air Station, where about 70% of the US's WWII Navy pilots trained.

For our new readers, Round Robins are published so Flight Simulator enthusiasts can fly using real-world navigation, look at the scenery, refresh knowledge of geography, practice cross-country navigation, and fly approaches at airports all over the world. And, of course, to have fun!

I ask the experienced flyers to please be patient through all of the explanations, directions and extras. I direct this at newcomers to the flying world, so I must stick to plain language.

Required Scenery

This Round Robin was flown using Microsoft's default FS 2000 scenery. (It can also be flown using FS 98 default scenery.) If you would like to use enhanced scenery, you can download various Kansas files (the Internet links for downloading the files can be found at the end of this article).

By
Al Pelletier

If you choose to download the enhanced scenery, you will also have access to more start locations in FS under the **World | Go To Airport FS 6 and before** menu. These locations will start you on the airport apron, rather than being positioned on the runway, for those of you who like to taxi out.

This Round Robin can also be flown with any simulators that have the required nav aids and airports. I flew a Twin Beech on this trip, which is best suited for a small to medium turbo-prop commuter. You might also like a medium-size jet aircraft.

About the author.....

Al Pelletier was born in Matane, Quebec in 1948. He served 25 years as aircrew in the Canadian Air Force, in a non-pilot role. His job centered around Radar, Forward Looking Infra Red (FLIR), and radio communications. He has over 6000 hours of flying in everything from Canadair Argus, Tracker, Sea-King Helicopter, DC-3's, and P-3's.

Al retired from the Air Force in 1990 as Warrant Officer and is now the owner of a small town Computer Retail store. His hobbies included Flight-Sim (Of course), fishing and gardening. He is presently taking flying lessons towards his private license.

A Round Robin Adventure Through Kansas

Round Robins Use Real-world Navigation

You will be getting information like airport departure and runway numbers, and VOR and NDB navigation signals enroute. There will be two or three middle airport destinations, using either VFR or instrument approaches, and then back to your point of departure.

You will also be given ILS and LOM frequencies, visibility minimums and procedures. After you fly a few of these, you will have a much better understanding of the different types of published procedures. You will learn to handle a lot of information in a very short time, while still maintaining control of your aircraft.

I also suggest that you read the entire route a couple times before starting, so that you will have the flight plan clear in your mind.

NAVIGATION LOG							
Waypoints	Route	Alt	Hdg	Dist	CS	Fuel	Time
		(ft)		(nm)			
KCT				Rem	Est	Est	ETE
				138.6	0ct	0ct	01E
EMP 012.0	D->	5000	051	72.0	322	25.0	0:13
				66.6			
IXD	D->	5000	054	66.6	322	23.2	0:12
				0.0			
Totals: Distance: 138.6 nm Fuel: 48.2 gal Time: 0:25							

FS 2000 flight plan for Wichita Mid-Continent to Olathe New Century

First Leg

From: Wichita Mid-Continent (KICT)
To: Olathe New Century (KIXD)
Distance: Approximately 140 nm

- Select Wichita (Mid-Continent) runway 19R in your flight simulator's Go To Airports menu. Set the season to spring and your clock to 10:00 local time.
- Dial in the Emporia (EMP) VOR, frequency 112.8, on NAV 2 and the Olathe (IXD) localizer, frequency 110.9 (course: 355 degrees), on NAV 1. Set your ADF radio to LOM (DUSTT), frequency 368.

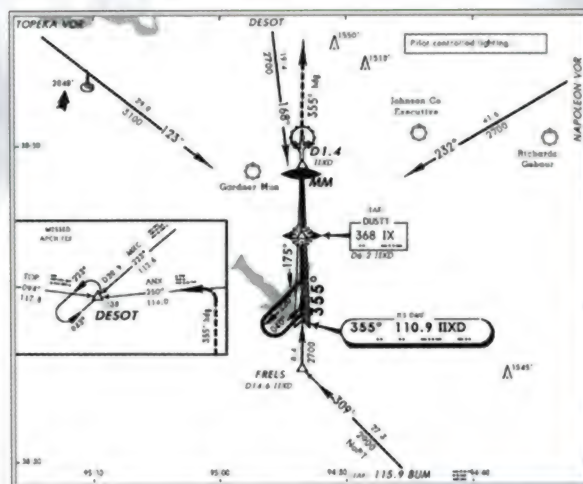
- Take off from runway 19R with a left climbing turn to 11,500 feet, at an approximate heading of 048 degrees, and track the EMP VOR until you are on top of it. Then establish yourself on the 054° radial of the EMP VOR and begin descending to 7,500 feet.



Climbing out from Wichita Mid Continent Airport

- 35 nm out of EMP, turn right to heading 080 degrees to intercept the LOC (about a 30 nm leg) and descend to 4,000 feet for an approach to runway 35. (Actual course is 355 degrees, elevation 1,087 feet, runway length 7,339 feet.)
- Intercept the LOC and continue with the approach. Remember the field elevation (1,087 feet).
- You are cleared to land on runway 35. Check to be sure the gear is down.

Land at Olathe



Olathe approach plate

A Round Robin Adventure Through Kansas



On the apron at Olathe New Century Aircenter

Second Leg

From: Olathe New Century (KIXD)
To: Salina Municipal (KSLN)
Distance: Approximately 140 nm

- Dial in and track the Fort Riley (FRI) VOR on NAV 1, at frequency 109.4 (approximate heading of 255 degrees) until you are on top of it (you might not get signal reception until 20 nm away). On top of FRI, dial in and track the Salina (SLN) VOR 117.1 on NAV 2 and dial in the Salina ATIS on your COM radio at frequency 120.15 for a weather report.
- Also, enroute to SLN, dial in the I-SLN Localizer at frequency 108.9 on NAV 1, course 353 degrees, in preparation for an ILS landing on runway 35 (actual course 353 degrees, elevation 1,273 feet, runway length 13,337 feet).
- At 25DME from the SLN VOR, turn left onto heading 180° and fly the 23 DME arc to intercept the LOC, and descend to 3,200 feet to fly the arc. Note: Look at the approach plate. You should keep the Salina VOR on your right wing tip, at 23 DME, and fly a circle (arc) until you intercept the LOC. With a bit of practice, this becomes a lot easier and starts to make more sense. Usually, five-degree turns at a time will work well.
- Intercept the LOC and continue with the approach. (If you have installed the KANSAS2000 scenery add on, you will have a great, realistic night approach with lots of airport lighting).
- You are cleared to land on runway 35. Check that your gear is down.

- Set your weather to 3,900 feet overcast, with stratus clouds and visibility of 5 miles from 0 to 9,000 feet altitude. Select windspeed from 340 degrees at 15 knots. In FS 2000, you can also choose moderate rain.
- Set your clock to 03:00 local time.
- Dial in the Topeka (TOP) VOR at frequency 117.8 on NAV 2.
- Take off from runway 35, making a left climbing turn to 10,000 feet, at an approximate heading of 255 degrees. Track the TOP VOR until you are on top of it, at an approximate heading of 296 degrees. On top of the TOP VOR, begin descending to 6,000 feet.

NAVIGATION LOG							
Waypoints	Route	Alt	Hdg	Dist	GS	Fuel	Time
		Overp		Log	Est	Est	ETE
IXD				141.3	Act	Act	ATE
TOP 017.0	D->	6000	296	35.7	322	12.4	0:06
				105.7			
FRI 109.4	D->	6000	255	61.9	322	21.5	0:11
				43.7			
SLN 017.0	D->	6000	259	35.6	322	12.4	0:06
				0.1			
SLN	D->	6000	300	0.1	322	2.0	0:01
				0.0			
Totals:		Distance: 141.3 nm		Fuel: 49.1 gal		Time: 0:26	

FS 2000 flight plan for Salina Municipal to Olathe New Century



Salina approach plate

A Round Robin Adventure Through Kansas



Evening landing at Salina Municipal Airport

Land at Salina Municipal

Third Leg

From: Salina Municipal (KSLN)
To: Wichita Mid Continent (KIXD)
Distance: Approximately 71 nm

You can lift the weather here and reset the clock for a day flight if you wish. I really enjoyed the early morning flight back, and the scenery looked great.

- Dial in the Wichita (ICT) VOR at frequency 113.8 on NAV 2 and the McPherson (MPR) NDB at 227 on your ADF radio. You can also dial in the LOC I-HOV 110.5 and set 193 on the NAV 1 OBI in preparation for an ILS landing on runway 19R at ICT (actual course 193 degrees, elevation 1,332 feet, runway length 10,300 feet)



FS 2000 flight plan for Salina Municipal to Wichita Mid-Continent

- Take off from runway 17 at Salina and climb to 5,000 feet, maintaining runway heading. Track the ICT VOR, which should be almost dead ahead.
- 30 nm from the ICT VOR, turn left to heading 148 degrees and descend to 3,000 feet to intercept the LOC for the ILS approach to runway 19R.
- Continue with the approach.
- Five nm back, you are cleared for landing on runway 19R. Check to be sure your gear is down.

Land at Wichita Mid-Continent

WELCOME HOME

Scenery Requirements:

- FS 98 users will need the KANSAS98A, -B, -C and -D.ZIP (four files in total) from <http://wings.ark.com/> or <http://www.SimWings.net> in the Full Throttle Round Robin area.
- FS 2000 users can get the installation file for KANSAS2000 (Kansas2000.exe) scenery at <http://wings.ark.com/>, <http://www.SimWings.net> in the Full Throttle Round Robin area or from Abacus at <ftp://ftp.abacuspub.com/pub/Kansas2000.exe>.
- You will also find extra maps, full-size approach plates and more for this article that you can download at:
<ftp://wings.ark.com/pub/fullthrottle/RoundRobins/kansas>.

Many thanks to:

- Chris Squire for test flying the route. Chris is a retired military pilot with over 12,000 hours of flying.
- Jeppesen for their kind permission to use their approach charts.

Visit Al Pelletier at <http://Simulatorwings.net> or email him at apeltier@mars.ark.com

How I Make Scenery

Night Lighting Textures by Tim Dickens

Now that FS 2000 has become more familiar to flight sim enthusiasts, scenery designers who have created so many wonderful add-ons over the last several years are upgrading their creations. I have also seen many newcomers to the world of scenery design recently.

In the last two issues we have outlined how to make scenery design tools work well with FS 2000. In this issue we continue the series with practical explanations and tips and tricks for creating night textures for FS 2000 scenery.

You say you want a revolution?

Making textures for Flight Simulator has frustrated scenery designers for the past several years. Texturing is the very heart of visual scenery. Without it we would still be back in the FS 4 world. (Remember when we thought those plain colored polygons were the cutting edge of realism?) The frustration came from having to work with a fixed palette of colors, found in a file called FS5.PAL. These 256 colors were all the available colors. FS 5 through FS 98 would not display any other colors.

FS 2000 and *Combat Flight Simulator* (CFS) both use Windows .BMP-format textures, which eliminate the old fixed palette system. Put simply, each texture you create contains its own color palette. Whatever colors you choose in your textures are displayed in the scenery as you intend them. There is no restriction to the number of colors, so ten different textures may have as many as 2,560 distinct colors, adding a new dimension to scenery creation.

A significant advancement in FS 2000 texturing is the introduction of realistic night lighting effects. In FS 5 through FS 98, the only colors that could be illuminated at night were eight specially designated *constant colors* on the fixed FS5.PAL color palette. No other color choices could be used for night illumination. This meant that windows, building interiors, etc., could only light up with their daytime appearance using those eight colors. There was no possibility for night shading or subtle variations of any kind.

Now that this color palette no longer restricts us, it is possible to create night versions of .BMP textures that feature very convincing night light effects, with any color combinations. In our December 1999/January 2000 issue we described the scenery code commands to initiate night illuminated polygons in the article titled "Making FS 2000 Scenery Using Present Design Tools." You can also find a tutorial on the *Full Throttle* Web site on this subject. I will not review these techniques in this article, so if you are not sure how to tell the scenery engine to light up a polygon at night, I recommend you review this material.

Here we will show you how to create textures for both day usage and night illumination, plus give you some tips and tricks.

Extended Bitmap format

Extended Bitmap format allows FS 2000 and CFS to only load small images when your aircraft is at a set distance from the polygon. This conserves system performance by not using full-size 256 x 256-pixel bitmaps. It takes a standard 256 x 256-pixel Windows bitmap and creates eight new images (sprites), each one smaller than the last. So in addition to the 256 x 256 sprite,

there are 128 x 128, 64 x 64, 32 x 32, 16 x 16, 8 x 8, 4 x 4, 2 x 2 and finally, 1-pixel versions of the original image. All nine images (the original 256 x 256 plus the eight reduced images) are saved in the .BMP file, one right after the other.

In FS 2000, all the textures used by Microsoft in the default scenery are in Extended Bitmap format. However, when creating visual scenery (sometimes called *Section 9* scenery) for FS 2000, you do not have to use Extended Bitmap format for 3-D objects, ground polygons and taxiways. These utilize either standard Windows .BMP format or the old raw *.R8 images.

Fortunately, a freeware utility from Martin Wright called *BMP2000* will convert standard Windows .BMP format images and save them in Extended Bitmap. It's easy to use and will produce textures in exactly the same format as the default textures.

For the time being, you may choose to simply use your present design tools along with standard .BMP images, since they still work just fine for your 3-D objects, etc. One thing to consider is that historically, changes like this are almost always universally adopted at some point. As we discover more and more about the new scenery engine, there will likely be a compelling reason to use Extended Bitmap when new design tools are introduced. From a practical standpoint, we may as well start saving our textures that way now so we won't have to go back and convert hundreds of them later.

Let's get our hands dirty

In this first article on texture creation, we intend to go through some basic techniques to night light a texture for a simple hangar. During the "old" FS 5 days, texturing was primarily used for rendering ground detail, and not as much for 3-D objects. But now, as the sophistication of the scenery and the power of our computers has increased, texturing is the name of the game. Simple plain-color polygon hangars and buildings just don't make it anymore.

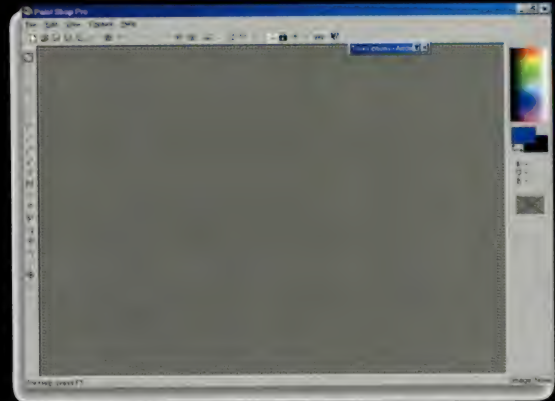
To explain how to create night textures, I will be using *PaintShop Pro 6*, since this is the program I am most familiar with. Unfortunately, I can not provide you with step-by-step instructions for all paint programs available, but the techniques are pretty much the same. I find *PaintShop Pro* (PSP) easier to work with than others, and it is widely used by scenery designers.

Setting up PaintShop Pro

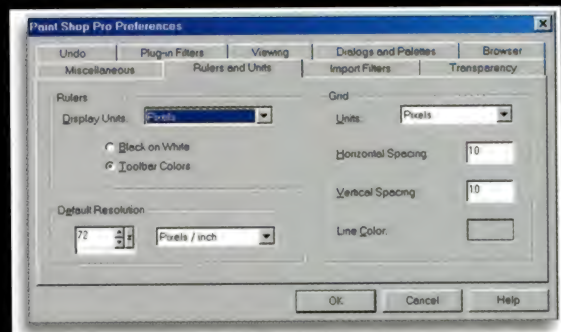
One of the reasons *PaintShop Pro* is so easy to use with FS textures is the very flexible way you can set up your toolbar. I am going to list suggestions for setting up your toolbar, but they are just suggestions. You can still access these commands from the menus, but I think it is much easier to take advantage of the toolbar options.

The first thing you want to do is set up your toolbars and general preferences. Step-by-step:

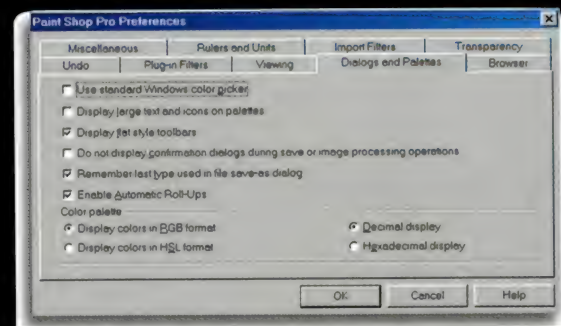
- Open PSP 6. This may look overpowering at the start, but I will explain what you need to work with.



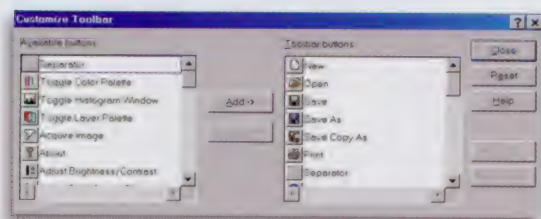
- Go to **File | Preferences** and select **General Program Preferences**.
- Select the **Rulers and Units** tab. Make the display units "Pixels" and the default resolution 72 pixels/inch.



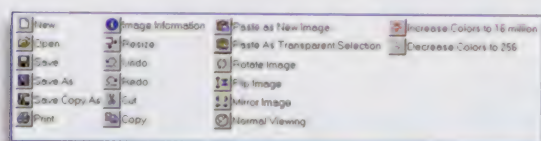
- Now go to **File | Preferences** and select general preferences again. Now click on the **Dialogs and Palettes** tab, and select the features as shown below.



- ✦ Now let's set up your toolbar. This will give you access to the most important functions of PSP without having to find them in the menus. Go to **File | Preferences** and select **Customize Toolbar**.



- ✦ You can organize them as you like, using the separator selection to distinguish individual groups of tool functions. These are the tools that I use:



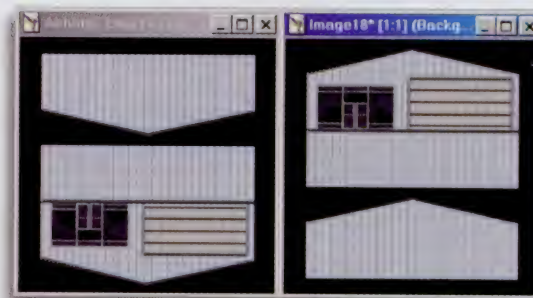
- ✦ Last, go to the **View | Toolbars** menu and make sure all of your palettes are available on your *PaintShop Pro* work surface.

Now your toolbars are all set up, and you are ready to work with *PaintShop Pro* to create your FS 2000 textures.

Let's get to work

The first thing you need to do, of course, is to load a .BMP texture. For this example, I am using a texture I created called *Abbdg2.BMP*. If you want to follow along with the same texture and you do not have the standard ASD texture set installed, you can get it at the Internet link at the end of this article.

When you first load the bitmap, you will find something unusual compared to the textures you have been working with for FS 5 – FS 98. That is, the pixel vectors are upside down compared to the raw .R8 format you are used to using. So if you are used to mapping textures with vector 0, 0 in the upper-left corner of the bitmap, you will need to flip it upside down before you save it. I create textures so that the image is oriented "normally," where the roof of a building is at the top. Then I map the texture as I am used to doing when creating objects. When I am finished with the texture, I flip it, then save it.



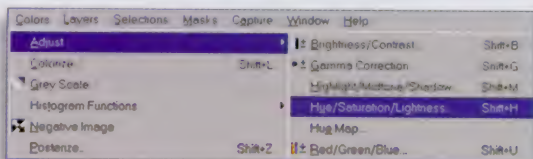
Make a copy of the original texture. With your image oriented the way you prefer, you will want to increase the *color depth* to 24-bit/16 Million colors. You will need to work in this format because:

- ✦ It will avoid color palette conflicts you will have using standard 8-bit textures, where the color indexes do not match when pasting texture patterns from one image to another.
- ✦ Most of the features in *PaintShop Pro* that we will be using will only operate when you are in 24-bit/16 Million color mode.

Go to the toolbar and click the "up" arrow to *Increase Color Depth* to 24-bit/16 Million colors. Next, go back to the toolbar and click *Copy* and then *Paste as New Image*. Do this because you will need to work with two copies.



You are going to darken the images, but use a different brightness level for the two. You will see why in a moment. Now go to the menu and select **Colors | Adjust | Hue | Saturation | Lightness**.

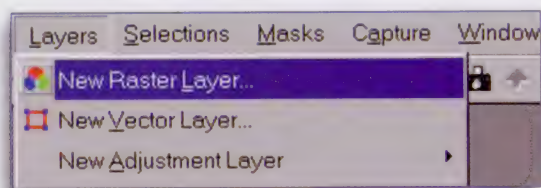


This illustration shows how to set the control sliders for a moderate darkening, to be used with image 1. Now go to image 2 and select the same menu. The settings you used on image 1 will appear by default. For the second image you want everything much darker, so you may need to set your *Lightness* slider much lower. In this case, I made it -72. This setting will depend on the original colors used in your texture. You can adjust the

lightness up and down to get the results you want. The nice thing is that if you make a mistake, you can simply choose the *Undo* function in *PaintShop Pro*, and you will be back where you started.

Layering

The next step is to copy individual section(s) from the lighter image, then go to the darker image and paste it in. To better facilitate this, I highly recommend that you first go to your darker image and create a new layer. This makes it possible for you to work with only the texture pattern you are pasting without affecting the original background image, while still seeing both superimposed.



To do this, select your darker image and go to the menu **Layer | New Raster Layer**. A second menu will appear, and all you need to do for our purpose here is click **OK** to accept the default options. Now you have a new layer to work with that will not affect the original background. To keep track of what layer you are working with, go to the **Layer** menu again. At the bottom it will tell you if you are working in the new layer you have just created or the original layer, which is always called "Background." You can switch between one layer and another here. Also, you can opt to view only one layer at a time. Just remember to keep track of where you are!

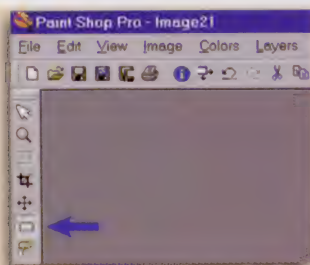


Figure 1

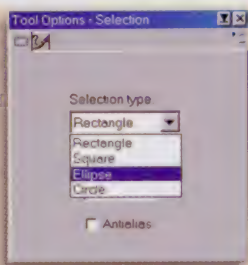


Figure 2

Now let's copy a portion of the lighter texture and paste it on top of the darker layer you just created. For this example, we will copy an oval shaped pattern from the center of the lighter image. The first thing you need to do is find the *Selection* tool on the default toolbar on the left side of the *PaintShop Pro* work surface (Figure 1, above). Now go to your *Tool Options* palette on your work surface. Select *Ellipse* on that palette (Figure 2, above).

Go to your lighter image and use the *Selection* tool to copy a portion of the image to be transferred to the darker image. For night lighting, oval shapes work the best. Now, with this oval selection made, use the *Copy* function from your toolbar (Figure 3, below).

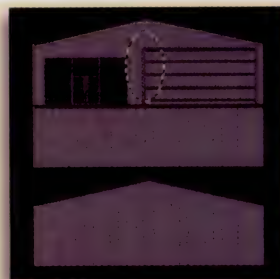


Figure 3

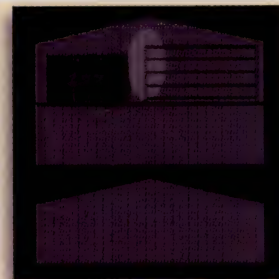
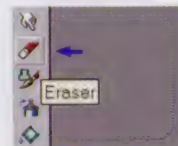


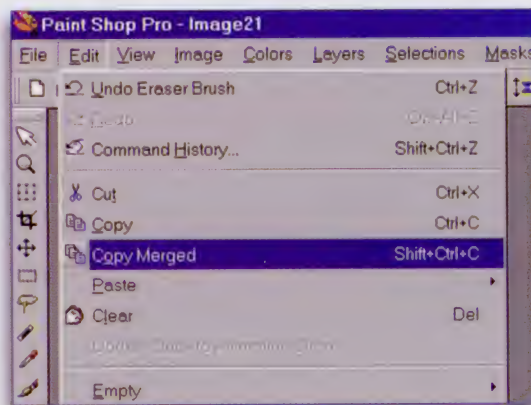
Figure 4

Next, go to the darker image, where you are set to work in Layer 1, and use the tool button *Paste as Transparent Selection*. Use the spyglass tool on the left-hand toolbar to zoom into a more detailed view. Make sure you paste in the lighter texture pattern so that it matches up (Figure 4).

If you need to erase part of your new layer, use the *Eraser* tool and simply erase the portion of the lighter image you pasted on this layer. This is a perfect example of why you want to use layers for this kind of bitmap creation. You can erase on this individual layer as much as you like, without affecting the original background layer at all.



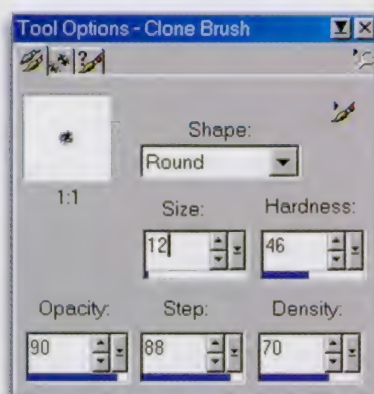
Once you have the basic illumination area set on this layer, you will need to blend between the lighter and darker portions of the image. To do this, you will need to combine both the background layer and your illuminated layer into yet a third layer on top. Again, you want to do this so that you can make modifications that will not affect the original images. To do this, go to the *PaintShop Pro* menu bar and select **Edit | Copy Merged** (see below). This will make a copy of both the original background layer and the new layer you are working in.



Now go back to your **Layer** menu, and create a fourth layer in the same way you did before. Then *Paste as Transparent Selection* and you will see the identical image come up, except you will be able to make edits here without affecting the original two.

Cloning around

To blend the sharp edges of your images together, it is best to make use of the *Clone Brush*. This will blend one texture pattern, of a given size, to another. First, select the *Clone Brush*, then go to the *Tool Options* palette and choose your parameters.



The options you need to be concerned with are:

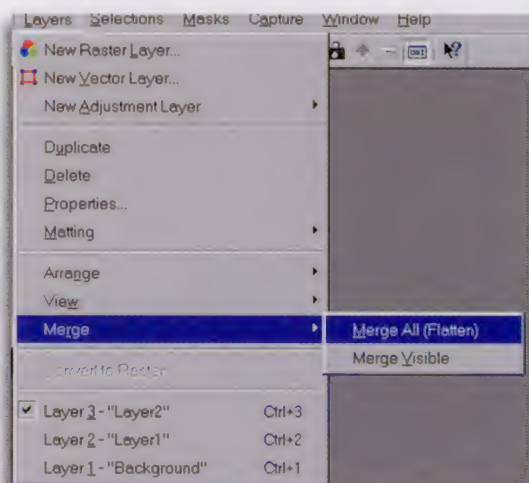
- Shape — make this round.
- Size — use a logical brush size. In this case, we will select 12 pixels
- Density — this will determine how much of the original pattern to apply. If you set this to 100%, it will copy over exactly, but then you will still end up with sharp edges. Try it at about 70% first and see how this works out for you. You will need to experiment a little to get the effect you want.

With your clone options selected, go to your image, on the third layer, and apply the *clone brush* by right-clicking your mouse on the texture pattern you want to copy, and then left-clicking on the portion you want to blend. Repeat this procedure as necessary to blend the sharp edges together. You can use the *Clone Brush* in a lot of creative ways. The final result is up to you. You will undoubtedly be adjusting the *Tool Options* and cloning back and forth on both sides of a sharp-contrast line to achieve the blending affect you want. Here again, working in the cloning layer only, you can erase and redo without effecting the other layers.

In addition to blending, you can also copy and paste illuminated features, like windows, from an entirely different texture and paste them onto yours. Again, I recommend a separate layer for the same reasons. Since you are working in 16-bit mode, you will not have to worry about color palette matching.

Merge and save

When you are satisfied with the entire image, you will need to merge all three layers into one so that FS 2000 can use it. To do this, just go to the **Layer** menu and select **Merge/ Merge All (Flatten)**. Make absolutely sure you are finished with the texture before you do this. If you merge the layers and only then find a mistake, you can use the *Undo* feature to go back to your layered version *until you close the image in PaintShop Pro!* You can save the image anywhere along the way, and the *Undo* feature will still work. But once you actually close the image, that's it. Double-check everything before you close the image!



Before you save your texture, reduce the image back to 8-bit/256 colors by using the down arrow you put on the toolbar. Also, if you need to flip the image, do so now.

The finished texture should have some very real night lighted effects. You may want to add small illuminated dots to represent lights, or anything else that you think will enhance your scenery.



Finally, just save the image as you normally would. Give it a name that is logical for the daytime texture you started with. In this example, the daytime texture is Abblgdg2.BMP and the night texture is Abblgdg2L.BMP ("L" for lighted). Until we have completely deciphered the new naming convention in FS 2000 default textures, you can use any system you like.

Day/Night Texture Switching

Keep in mind that sometime soon all of these default texture names and the new scenery code to apply them will be deciphered. For example, we know that it will be possible to implement day/night texture switching with just one command. There are still some unknowns here, so I recommend you hold off on trying to upgrade your texture names at this time. But, you will probably rename them later.

For this example, I will give you some typical SCASM .BGL compiler code to perform this task. To perform this operation, you first declare the daytime texture, and then insert a "conditional" statement to switch them at night. It looks like this:

```
ConcavePoly - Tells FS the object is 3-D
SurfaceColor( 03 f0 ) - Color underneath
Bitmap( Abblgdg2.bmp 0 0 0 0 ) - Day texture
IfVarAnd( :label1 28C 6 ) - Means "if it is
dusk, dawn or night"
Bitmap( Abblgdg2L.bmp 0 0 0 0 ) - Night texture
:label1 - Begins definition of :label1
Inst_7D
ShadedTexPoly(draw the rest of the polygons
here) - All polygon commands go here
:label2 - End definition of :label1 and start
new
```

More definitions for these instructions can be found in the Scadoc manual that is included with SCASM.

Until next time

This should give you the techniques you need to create night textures for FS 2000. As new information on texture naming and polygon instructions are discovered, we will review them in future issues.

Internet Links for Utilities Used

PaintShop Pro 6
<http://www.jasc.com>

Martin Wright's BMP2000
<http://fly.to/mwgfx>

To download the Standard ASD textures to use the example texture, you can find them at:
ftp://ftp.abacuspub.com/pub/asdv21_textures.zip

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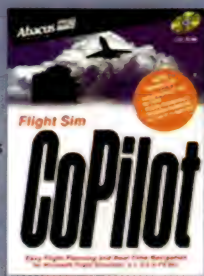
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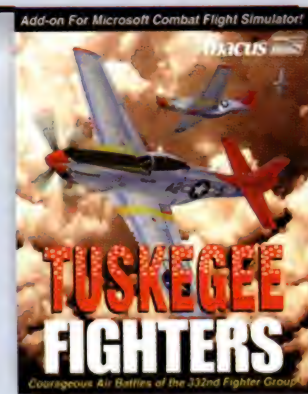
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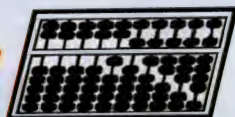
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On Top Version 6.0

IFR Simulator for the PC

By Phil Paschutine

Choosing which IFR (Instrument Flight Rules) simulator to use has never been easy. Some users want a photorealistic instrument panel, while others prefer one that can be edited to include their preferred instruments. Some want to use their own hardware, and some want a dedicated throttle quadrant. I have tested Federal Aviation Administration (FAA) Level II approved flight simulators that had really bad graphics, but were excellent performers. The final choice of an IFR flight simulator will depend on the user's flight experience and his or her final objective. PC flight simulation enthusiasts with no intention of getting an IFR ticket often prefer superior graphics. Pilot trainees tend to look for functionality over a photorealistic panel.

This review looks at Aviation Supplies & Academics' (ASA) *On Top* version 6.0.

Installation and Documentation

On Top provides the expected bug-free installation. The 106-page spiral bound manual includes 11 chapters, the most significant covering PCATD (Personal Computer Advanced Training Device) mode, plus setting the aircraft, cockpit, position, weather and failure options. The manual also addresses flight analysis and aircraft specification.

The basic performance tables for each aircraft offer cruise, cruise descent, cruise climb, approach level, precision and non-precision descent data, gear state, RPM, and airspeed. Two icons represent the attitude (with degree information) and the vertical speed indicators.

If you already own *On Top* 5, the upgrade to 6.0 consists of a single CD with a one-page upgrade on the new aircraft, the worldwide database and a three-page information sheet.

The Hardware

On Top 6.0 has two operating modes:

✈ *Personal Use.* If you plan on using *On Top* in Personal Use mode, any joystick and rudder pedals will do the trick. Instruments, switches and knobs that require a physical action are mouse activated.

✈ *PCATD Mode.* If you work in PCATD mode, a mouse is of no use and the program must recognize a yoke, throttle quadrant, rudders and an avionics panel. ASA's preferred control hardware is the Cirrus yoke, AV-1 avionics panel, Precision Flight Control PFC-3 and a six-lever throttle quadrant to be used with either the single- or twin-engine aircraft. There is no mention of any particular rudder, but you do need one. I failed the FAA compliance test because my hardware did not have a trim and mixture control. Then again, I'm not logging IFR sim time.

Personal Use mode accepts both joystick and mouse control to tune the radio frequencies, whereas PCATD mode does not allow use of a mouse, since any physical action is performed via the flight control hardware. Frequencies are displayed above the glare shield. If you use the AV-1 avionics panel, you will not see any on-screen control knobs. The GPS and moving map are not available in PCATD mode.





The main menu of On Top version 6.0

If you are lucky enough to possess the required hardware and you do not plan on using the PCATD mode to log simulation time, you can use it for ground training purposes, according to the FAA regulation 14 CFR 141.55.

Mouse control in *On Top* v.6.0 is great! I always have a hard time finding the exact "hot spot" in many simulators and lose precious seconds when landing. But the button hot spots in *On Top* are perfectly placed.

Rotating the mouse above the glare shield will give you a 360° view outside. The view can be panned up and down only a few degrees, but this is enough to let you see the ground, your wings and the sky. When you let go of the mouse, the cockpit view will return to normal, but the outside view will remain locked in its last position.

Nine Aircraft are Included

- ✈ Cessna C172P Skyhawk
- ✈ Cessna C182 Skylane
- ✈ Cessna C182RG Skylane
- ✈ Piper Warrior II
- ✈ Piper Arrow IV
- ✈ Mooney MSE
- ✈ Beech Bonanza V35B
- ✈ Beech Baron BE 58
- ✈ Beech 1900 BE 1900

The Instrument Display

The instrument gauges are highly readable, so you do not need to squint during scans. The autopilot functions well. The sounds are fine, but they are not something on which I base my choice of an IFR simulator.

The GPS (Personal Use mode only) will allow you to go directly to any airport, waypoint, VOR or NDB. You can also build and edit flight plans, then save them for later use. The zoom feature of the moving map display (Personal Use mode only) shows airport, NDB and VOR icons.



High-resolution instrument displays

Airport and Navigation Database

The database within *On Top* v.6.0 includes:

- ✈ All IFR and VFR (Visual Flight Rules) airports and nav aids
- ✈ Victor routes
- ✈ Waypoints
- ✈ Enroute fixes
- ✈ IAP fixes and holds for the USA
- ✈ Major airports

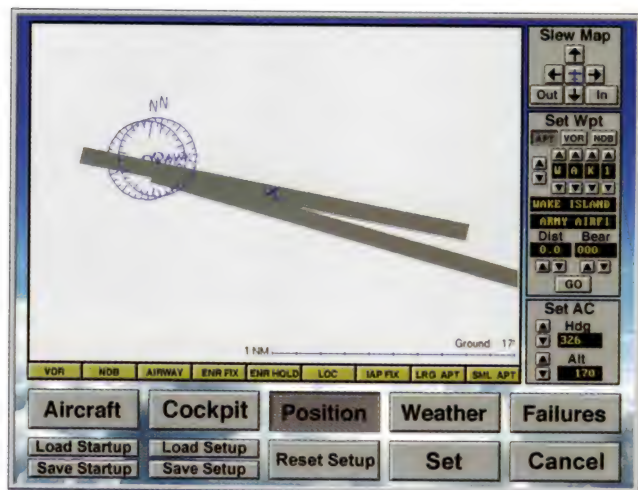
Most of the smaller airfields are not in the database, nor does it have any airways or holds outside the United States. Since ASA sells worldwide, I believe many non-US pilots will not be happy.

None of the high-end PC training programs I have reviewed to date has had a 100% bug-free database. Even "official" enroute charts have errors. However, *On Top* 6 simply has too many errors, and until ASA addresses these problems you will have to deal with them. These include:

- ✈ No use of non-IATA or ICAO codes for airport outside of the United States. There are many airports or airfield outside of the US, but finding them may prove difficult.
- ✈ Misaligned ILS and offset LOCs transmitters.

✈ *Bug in the GPS “Direct To” function.* When you dial NDB BN, for example, the display will tell you this entry is non-unique and you can cycle them by adding an extra number. Using VORs with the Direct To function is a totally different matter. Taking off from BDL (Bradley, CT), I wanted a Direct To to MAD (Madison, CT), but the only available navaid was MAD in Los Angeles. I have many other examples. Of course, this means that VOR nav aids not displayed in “Direct To” cannot be inserted in flight plans.

✈ *Other odd or missing data.* In the figure below you will see Wake Island with duplicate nav aids and runways.



Wake has two runways and two nav aids.

✈ *The database does not include any coastlines.*

Graphics

The airports are plain, as one would expect from an IFR flight simulator. Some obstacles on the final approach path would be nice, reminding you not to fly below the glide path. This obstacle feature is missing from all of the IFR simulators I have reviewed to date, and I wish that one day someone will have the good idea of including them.

The runway markings are very accurate, and the airport sits on top of a light grass textured polygon that is easily found amidst the green representing the world. Of course, the graphics quality in today's PC flight simulation programs far exceeds what you get in IFR training simulators. An IFR trainer is intended as a learning and proficiency tool. The only really important graphics are what you see on approach to the runway, and *On Top* v.6.0 does a fine job in this regard.



The graphics engine displays accurate runway markings.



Program Settings

You can create, save and load your situation files with the following choices:

- ✈ *Aircraft*—If you are not happy with an aircraft's current instrument display, you may change one or several instruments in the panel window. You can also add a few more “passengers” in the Weight section.
- ✈ *Cockpit*—There are 45 preset avionics, controls, panels and autopilot variables. There are even texture settings for the view out the window. Frame rate is *not* an issue here, since the only textured polygons you see are on the ground and at the airports.

✈ **Position**—By default the aircraft will be centered at the geographic location of an airport, usually the center of a runway. From there you either adjust your aircraft location with the mouse or define a distance and bearing to that geographical center (using the arrows or keyboard input). You can click on any VOR, airport NDB or ILS to obtain its information and send the frequency to the avionics panel. The map can also be centered on the aircraft position. You can change the aircraft heading and altitude using the arrow keys or keyboard input.

✈ **Weather**—You can adjust 32 weather variables to experience a great variety of weather situations. A nice feature is the *variability factor* that will affect preset weather variables. Flying by the numbers is what you will need to do with a 0.25 NM horizontal visibility. You cannot see anything but white, so it is best to forget all outside reference and start scanning the instruments. The transition from cloud top to clear blue sky is very thin, but it is there.

✈ **Failures**—These can be pre-programmed with a delay of 0 to 61 minutes. If "Failure delay" is set to zero, random failures can occur within the time limit specified in "Delay range." The maximum delay is 99 minutes. Of course, knowing that something can happen at any time of the approach and landing procedure is a sure way to get your attention. Page 73 of the manual lists 12 instruments and system failures and how to recognize them. On the next page you will find ways of correcting some of the failures. In case you have programmed a failure to happen within a specific time frame, and you fail to identify it, you just enter 77000 in your transponder radio and the failure will be identified in the upper window.



You will not comply with FAA standards unless you have the necessary hardware controls.

Flight Analysis

You may refer to the map at any time during the flight or after the flight for analysis. With its VCR-like interface, you can replay the approach and check the instruments at any particular

moment of the flight. Most important is the glide slope that overlays your descent diagram. You want to keep it below your descent profile. Another nice feature is the *flight highlights*. If you set cloud bases on approach, you will see a thin line in profile and be able check if you are below minimums. Information is also given for approach flaps, landing flaps, gear extended and passing over runway marker beacons. If you see a red dot in plan view, you can click on it to see which failures have occurred.

Conclusion

If you can live without using the GPS and don't care if IATA/ICAO airport codes are not used for flying outside the US, then *On Top 6.0* is what you are looking for. But If you are training towards your IFR ticket, looking to maintain proficiency, need the GPS to fly long trips, or you want to fly outside the US, then *On Top 6.0* may not be your best choice.

Regardless of these considerations, ASA really needs to address their database problems. This is a critical aspect of any IFR trainer. I asked ASA what they intended to do about the airport and nav aids database problems, and I was told that they would look into it and see what could be done.

But of course, one critical aspect of choosing an IFR training simulator is price. At less than \$100.00, *On Top 6* is a very attractive package.

On Top Version 6.0

Aviation Supplies & Academics, Inc. (ASA)
7005 132nd Place SE
Newcastle, WA 98059-3153
<http://www.asa2fly.com>
info@flightworld.org
SRP: \$99.95

System Requirements

- ✈ 486DX-100 or faster CPU
- ✈ Windows 95/98
- ✈ 4x CD-ROM Drive
- ✈ 800x600 SVGA minimum
- ✈ 12 MB system RAM
- ✈ 20MB Hard Disk
- ✈ Mouse and Joystick. Yoke and Rudders are optional.
- ✈ Requires Soundblaster sound card, or one that is 100% compatible.



TEAM ALLIGATOR

Combat Helicopter Simulator

Since *Apache Havoc* debuted last year, things have been pretty quiet on the combat helicopter simulation front. That does not mean the competition has not been hard at work on new combat simulations of their own, because they have. One such simulator is being produced by Simis, the same developers who teamed with SSI to deliver *Team Apache* back in 1998. Now they are working with GT Interactive, and *Team Alligator* promises to deliver even more thrilling gameplay and the same kind of features that make *Team Apache* accessible to both veteran and novice simulation enthusiasts.

Things are a little different this time out, because Simis is not developing another helicopter simulation around US military technology. This time they are creating a combat simulation focusing on the latest Russian technology. This is not much of a stretch for them, because one of the first combat simulations Simis created years ago was based on the MiG-29 Fulcrum.

Team Alligator focuses on the Ka-52 Hokum-B "Alligator." The Ka-52 is a command and control variant of the Ka-50 Hokum "Werewolf." The Ka-52 is packed with the latest high-tech avionics and weapon deployment systems. The Ka-52 also features two counter-rotating main rotor assemblies. This explains why it has no tail rotor. Counter-rotating rotors eliminate the torque effects experienced in a conventional, single-rotor assembly helicopter. This design allows the Ka-52 to turn on a dime, while also being a lot easier to fly than most conventional rotor-driven aircraft.

By Rod White

Flight Model Realism

Team Alligator simulates the Ka-52 Hokum-B in amazing detail. The flight model realism options feature:

- ✈ Control Lag
- ✈ Realistic Ground Effects
- ✈ Realistic Stability
- ✈ Blade Stall
- ✈ Vortex Ring State and Reverse Collective.

Control Lag realistically simulates the amount of time between your joystick movement and its effect on the helicopter. Most players won't even realize they have this option, as the lag is almost unnoticeable while playing.

Realistic Ground Effects is also a cool option, because it can help increase the lift effectiveness of your rotors when in a low hover. The down-wash from the ground below helps your rotors create extra lift.

Realistic Stability, when turned on, allows your helicopter to fall back to center when you release the stick. With this turned off, you will find that holding a set speed is much easier, but turning at low altitude will become more challenging. This is an option most simulation enthusiasts will have to tinker with to learn which way is more comfortable.

Blade Stalls can be very dangerous. Due to the dual-rotor design of the Ka-52, it does not go into a stall like most conventional helicopters. Instead, the Ka-52 blades can strike each other, making a normally bad situation much, much worse.

The *Vortex Ring State* (VRS) option, when off, makes it much easier to descend and pull out of the descent by adding a little *reverse collective*. With VRS on, chances are you will encounter some rough situations if you fly the Ka-52 the same way you would fly other combat helicopter simulators. I prefer to leave it off.

As you can see, *Team Alligator* features a very wide variety of flight model options for hardcore and novice combat simulation enthusiasts.



Gorgeous snow visual effects

3-D Graphics

Simis' *Team Apache* featured a very impressive graphics engine that offered 3-D acceleration for Direct 3D and 3Dfx Glide. At the time of its release, most simulators were still offering Glide-only 3-D accelerated graphics. The graphics engine in *Team Alligator* is about three generations beyond what they created for *Team Apache*, and it certainly shows.

The polygon count is much higher, and the degree of detail has skyrocketed in *Team Alligator*. The engine employed in *Team Alligator* offers 3-D acceleration via Direct 3D-only, as 3Dfx Glide is now a format that is almost dead today.

Screen resolutions range from 640x480 all the way up to 1,600x1,200 for both 16-bit and 32-bit color depths. Visual effects like rain, snow, dusk and dawn are represented very well, too. Your helicopter is even outfitted with windshield wipers to help you see through those stormy situations!

The 3-D objects found throughout the game are also worthy of mention. You can actually see the tank commanders peering out of the tops of each tank, and all of the ground units are fairly articulated. For example, the turrets of anti-aircraft artillery (AAA) and surface-to-air missiles (SAMs) can be seen tracking targets.



A small, yet very detailed, 3-D encampment

You will find many other units on the move as you make your way over the battlefield in each mission. It is not unusual to see truck convoys doing their thing, platoons of tanks moving in formation, and even individual 3-D soldiers marching on the ground in the *Team Alligator* missions. At one point, I actually witnessed the 3-D infantry soldiers switching to a prone position to take an offensive stance against the enemy. Now that's true attention to detail!

The terrain is also a sight to behold and is perfect for a helicopter combat simulation. You will see rolling hills, mountains and contoured terrain in each and every mission, complete with a lot of structures. Although the terrain does not have the photo-realistic flare of Jane's *USAF*, it does look very believable. It looks absolutely fabulous both up high and down low. This is really important in a helicopter combat simulation, since most of the action takes place at 50 feet off the deck.

Trees are also modeled nicely, but only in small clumps here and there. Quite honestly, in the graphics department, *Team Alligator* may very well be one of the prettiest 3-D accelerated combat simulations we will see this year. It really looks that good.

The Cockpit

Once in the cockpit, you will find full-blown 3-D cockpit art, complete with working gauges. This is both good and bad. Although I prefer a 3-D cockpit, a well done 2-D cockpit usually looks a little sharper. The 3-D cockpit in *Team Alligator* looks great, but it gets a little rough around the edges in resolutions of 800x600 and less. If you must run in a lower resolution mode, you can turn off the 3-D cockpit to use a full-screen HUD view instead.



There are lots of things to keep track of while in the cockpit!

When panning around in the cockpit, you will also find that they have modeled a true 3-D Weapon Systems Officer (WSO), who at times can be caught messing around with the cockpit controls. The 3-D WSO adds a higher level of immersion to the simulation, instead of leaving you feel like you are the only one in the aircraft as other simulations tend to do.

Special Effects

In the special effects department, *Team Alligator* also passed with flying colors (no pun intended). Explosions, smoke and all the environmental details are truly outstanding. You can see smoldering hulks of metal on the battlefield left over from decimated tanks. Even gradual smoke trails emanating from your own chopper are present after taking too much damage.

I also enjoyed the gradual damage that the 3-D objects display. Buildings don't simply drop and fold in on themselves from a single rocket attack. Instead, they can take several hits before complete destruction occurs. Debris also flies about, and little pieces of buildings fly off while hitting them with rockets. The helicopters also take gradual damage, rather than suddenly disappearing in a quick fireball. You can even see spent casings flying about when firing the guns in the Ka-52. This really helps to immerse the player deeper into the simulation. The ejection sequence is also a real treat. Unlike most combat helicopters, the Ka-52 features the ability to eject by explosively separating the rotor assemblies. The crew seats are simultaneously extracted from the cockpit by large rockets. To say the least it, is a neat sight to see.

Sound Effects

The simulation also sounds as good as it looks. Lots of in-flight radio chatter is present with a Russian accent. You can even have the chatter spoken in Russian if you like. The audio was a little quirky on my Sound Blaster Live! 3D audio card. However, I suspect they will soon address this. It worked flawlessly on another machine containing an A3D-based soundcard.

Gameplay Options

The gameplay options include six great training missions that include tutorial-style voiceovers. You are not just shown what to do. A virtual instructor pilot with a thick Russian accent tells you how to do it. I recommend starting with the Training scenarios first, because some of the key commands are pretty complex. Flying the Ka-52 takes a little getting used to due to the design of the Ka-52 and the keyboard layout Simis/GT Interactive offers. The training scenarios will brief you on how to tackle the basics.

Like *Team Apache* before it, *Team Alligator* features the means to go in-depth and control the actual resource management aspect of the simulator. You can select and pair WSOs with pilots and keep track of how they get along with each other. You can even give them perks to increase their moral, which affects their performance in the battlefield. This is a feature no other helicopter combat simulator (other than *Team Apache*) has ever offered.



The in-flight map

Quite honestly, I can't say that it is a must-have feature. I would much rather just tackle the missions at hand and leave stuff like that to the computer. Thankfully, you can do just that as well. The "team management" feature is one you can toy with or leave alone entirely. I have a notion it is a feature that many simulation enthusiasts will find enjoyable.

Campaigns and Combat Missions

The action in *Team Alligator* takes place in Tajikistan (just north of Afghanistan) and Belarus (just north of Ukraine). Options for Campaign, Combat Missions and Instant Action are provided.

The *Combat Missions* menu provides eight missions for each provided of the Belarus and Tajikistan environments. You can access the *Mission Planner* in both *Campaign* and *Combat Missions*. Here you'll modify or assign new waypoints, determine who will be the Formation Leader, and outfit your airframe with different weapons before taking flight.



Flying the Alligator into the face of the enemy

The campaigns run in real-time, but they are not true dynamic campaigns like those found in *Falcon 4.0* or *Longbow 2*. In *Campaign* mode, you take on the role of a Russian aviation squadron commander with six Ka-52 Alligators, sixteen crewmembers and eighteen maintenance crew chiefs at your disposal. Intelligence briefings and newspaper reports inform you of how your campaign is progressing. The challenge level raises considerably if you select to manage the crewmembers and crewchiefs. You may be overwhelmed by having to keep track of so much. But again, you can select to just play out the missions as flight leader and leave the rest to the computer to handle behind the scenes.



Loads of detail, right down to individual 3-D infantrymen

It is safe to say that the campaigns are semi-dynamic. The missions are scripted missions, but the outcome of one can affect another, which makes the campaigns very flowing and dynamic-like. For example, the loss of crewmen may result in rescue missions being mounted to recover them, and other missions may not surface until you have done something right or wrong in a previous mission.

Multi-player

Support for multi-player rounds out the gameplay options, with support for head-to-head, team and cooperative multi-player over the Internet and a LAN. We did not get the chance to try it as a multi-player simulation, but the mention of cooperative multi-player support in campaign mode is very promising, especially if *Team Alligator* works well over the Internet.



Mobile AAA tracking a threat

Conclusion

Ka-52 *Team Alligator* is the kind of combat helicopter simulation that takes some getting used to. But once you've grown accustomed to it, putting the CD away becomes even more challenging than the combat scenarios within the simulation itself.

Team Alligator has a lot to like, because it features breath-taking visuals, challenging combat scenarios and the ability to manage your aircrew/support staff, while modeling a Russian next-generation combat attack helicopter in extreme detail. What's not to like? If you are looking for something different, challenging and thrilling, *Team Alligator* is a simulation you need to check out.

Simis/GT Interactive

http://www.gtgames.com/games/team_alligator
SRP: \$34.99

System Requirements

PC 200 mhz processor
32 MB RAM
DirectX-compatible 3-D accelerator video card
with 4MB on-board memory

F/A-18 Simulator: Upclose

Full Throttle Takes A Close Look At F/A-18 Simulator

by Rod White

We have seen our share of US Airforce F-16 Fighting Falcon simulations and more than our share of US Airforce F-22 Raptor combat simulations in recent years. But air combat simulations depicting single naval combat aircraft have been few and far between. Graphic Simulation's *Hornet 3.0* and *Hornet: Korea* are still considered by many as two of the best F/A-18 simulations for both the PC and Mac platforms.

But Jane's Combat Simulations and Electronic Arts announcement that they were working on an F/A-18 Super Hornet simulation excited many combat simulation enthusiasts. The F/A-18 and especially the Super Hornet variant are based on the latest and greatest technology for weapons delivery and avionics. The team behind Jane's *F/A-18* is the same Baltimore, Maryland group that developed Jane's outstanding F-15 simulation.

What makes the F/A-18E Super Hornet so much better than the F/A-18C/D version? The Super Hornet is bigger, faster, can go farther, carries a much bigger payload, and



has the ability to carry more types of modern smart-weapons into battle. The F/A-18E even features the advantage of a little stealth technology, featuring a greatly reduced RADAR signature.



The Hornet packs a punch

The Menu Interface and Tools

The first thing you will notice after loading the program is that the interface looks a great deal like Jane's *F-15*. This is a good thing, because it features a very colorful interface that is easy to navigate. Jane's *F/A-18* also offers a wide variety of gameplay and options. From the main menu you will find selections for *Training*, *Instant Action*, *Single Mission*, *Campaign*, *Tools* and *Multi-player*.

Training features 16 missions designed to introduce you to the F/A-18 Super Hornet, including basic take-off and landing missions. These missions also give you more in-depth tasks, like launching missiles and deploying air-to-ground ordinance, and even harder tasks, like landing on the aircraft carrier or mid-air refueling.

The *Instant Action* menu allows you to select the number of wingman you take into combat, the number of enemy aircraft present, the time of day, where the action will take place, and if there will be an air-to-ground target (and what it will be). An Advanced sub-menu, among other things, allows you to tweak the AI for the wingman and enemy aircraft and to place them at different starting altitudes and advantages.



My human wingman and I approaching the primary target

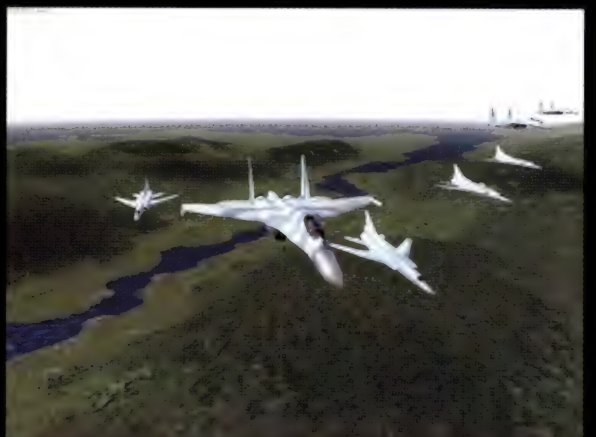
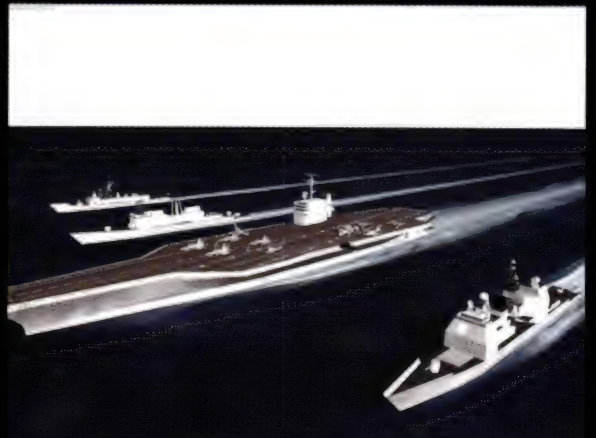
The *Single Mission* interface lets you select from 20 different pre-designed missions. These range from stopping tanks and taking out destroyers to more complex tasks, like mid-air refueling at night and landing on the deck of a pitching and rolling aircraft carrier in bad weather—a true test of piloting skills.

The *Campaign* section is where the real action takes place in Jane's *F/A-18*. First you'll want to select with which Squadron you want to fly the campaign. Real F/A-18 squadrons and their insignia patches are depicted, which is a real treat for realism buffs. Other *Campaign* options include the means to select the complete North Cape campaign scenario or Phases 1-3, which are essentially mini-campaign scenarios. The campaigns are semi-dynamic, consisting of pre-scripted missions designed with dynamic events that keep the scenarios feeling realistic and flowing. Best of all, you can replay the scenarios and things may take place differently than before, so there's good reason to play each scenario again after you have completed them.

The *Tools* menu allows you to create your own missions. This essentially gives you the same tools that the developers used to create the missions. All in all, Jane's *F/A-18* has an almost unbeatable replay value. It also includes an undocumented feature that allows you to access the *Campaign Builder* from the *Tools* menu by pressing [F1]. Once you figure out how to take full advantage of the tools, you can create both single missions and full-blown campaigns. Chances are you won't have to, because many F/A-18 enthusiasts on the Net are already creating new missions and campaign scenarios for you to download!



Examples and scenes from the F/A - 18 Simulator





On Janescombat.net with a human wingman on my six!

The Multi-Player section features a good variety of options. The main ones are for selecting connection types, like IPX (IPX/SPX Network), TCP/IP (TCP/IP Network/Internet), modem and serial (null-modem and direct-connect).

Additionally, free online multiplayer support (as long as you have an existing ISP account) is also provided at <http://www.janescombat.net>. All you have to do is sign up for a free account that takes literally seconds to setup.

Once logged in to JanesCombat.net you can play almost any of the Jane's Combat Simulations products, like F-15, USAF, Fighters Anthology, Longbow 2, Fleet Command, IAF, WWII Fighters and now F/A-18. Jane's Combat Network is well worth checking out.

You can play head-to-head, as teams and in cooperative multi-player sessions with F/A-18 that are a joy, even on a dial-up 56K-modem connection. I played hours of F/A-18 over Jane's Combat Network. There is really nothing like playing through the Campaign missions with another human player who has filled out the pilot roster as your wingman. You can also create and play user created missions cooperatively, so you will never run out of missions to fly in multiplayer games of F/A-18.

What's under the Hood?

F/A-18 is a very complex and realistic simulation of the F/A-18E Super Hornet aircraft. The flight and avionics modeling are top notch. But if you think you will crank up the realism options and seconds later be killing bogeys with ease, you are in for an education if you don't have previous simulation flight time under your belt. Although Jane's does provide a 200+ pages, spiral-bound manual, it only touches on the surface of what a beginner needs to know. It does not go into enough depth to cover the true workings of the RADAR and weapons deployment systems.

The Training missions are helpful. But again, it may take a lot of trial and error to learn how to get the most out of F/A-18 due to the lack of narrated training scenarios.

But the depth does not end there. Before each mission, you will find great in-depth mission briefings and debriefings, and you can even check the performance statistics of the pilots and squadrons.

The simulation does a great job of keeping track of your pilot career, making F/A-18 not only an in-depth simulation, but a rewarding one as well. You can dip into the mission planner before each mission, giving you almost complete control over each and every combat mission.



Waiting for take-off on the deck of the USS Ronald Reagan

And let's not forget that this is a true naval simulation. F/A-18 features a true pitching and rolling aircraft carrier. You are assigned to the USS *Ronald Reagan* when out at sea, and let me tell you that trying to land the Super Hornet on the deck of the carrier is one of the most challenging situations you will ever face. That is, next to mid-air refueling. Thankfully, there is an option to use the autopilot for carrier landings and refueling. Once in the cockpit you will find that almost all of the buttons and dials can be manipulated with your mouse cursor as well. So once you learn what each function does, you will no longer be a slave to the keyboard, as you are in other simulations that don't offer this level of interaction.

F/A - 18 Simulator: Upclose



My human wingman and I diving for the kill

The Ordnance

In simulating the F/A-18E Super Hornet, Jane's has given players the chance to deploy some of the most advanced, next-generation weapons systems into the combat zone. In *F/A-18* you can deploy CAPTOR and Quickstrike aerial mines, Walleye (TV-guided bombs), the AGM-123 Skipper (air-to-ground missile), Napalm, Harpoon (anti-ship missile), even SLAM-ER, JSOW, and JDAM GPS guided weapons! All in all, *F/A-18* features the most impressive arsenal that modern military technology can offer.



A glimpse at the arsenal found in F/A-18

The 3-D Graphics

F/A-18 is a very appealing-looking simulation. But it does lack some of the photo-realistic eye-candy we have been spoiled with in titles like Jane's own *WWII Fighters* and the

more recent *USAF*. However, I should also add that the action in *F/A-18* takes place in the Kola Peninsula of the Murmansk area of Northern Russia, which is not the kind of territory you would want to go sightseeing in, unless you are turned on by tundra.

At a glance, *F/A-18* looks very much like Jane's *F-15*, with the addition of superb dynamic lightning features and gorgeous 3-D clouds. *F/A-18* also features truly outstanding 3-D explosions.



Look at that dynamic scenery!

A major improvement is that they do not render terrain in a limited circle around your aircraft. *F/A-18* allows you to see for miles ahead without the broken up terrain effect found in *F-15*. The graphics are also 3-D accelerated via Direct 3D, and resolutions as high as 1,024x768 are offered. This is a little disappointing in the day and age of being able to reach as high as 1,600x1,200 in 32-bit color. However, I must also admit that 1,024x768 is more than enough to slow down even some of the fastest Pentium III-class machines. Even on our decked-out Pentium III 550MHz rig, with 256MB of PC100 SDRAM and a TNT2-Ultra video card, the simulation showed a fairly dramatic performance boost when dropping the resolution down to 800x600 from 1,024x768. I also did not like the fact that the F/A-18E you fly looks much better than all of the other aircraft you encounter in the simulation. The rest of the planes appear very generic, but I'm guessing this also helps keep the frame rates on a lower-end machine from being even worse than they already are.

Sounds

Audibly, *F/A-18* delivers a top-notch performance. During each mission you are bombarded with radio chatter from your wingman and other allied aircraft that are participating in the operation. I have to say that *F/A-18* goes beyond the outstanding sounds found in their previous *F-15* combat

Full Throttle On The Web

Check out the Full Throttle website (www.ftmagazine.com). It's the perfect place to start for information on flight simulation and aviation. At the Full Throttle website you'll find:

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simulation. Even the weapons systems and warning cues are very well done, so there are no complaints on the audio in *F/A-18*.

Conclusion

Looking at the direction the hardcore combat simulation market is headed today, *F/A-18* might be the last truly in-depth and complex combat simulation released until more fuel from hardcore combat simulation enthusiasts can reignite the market with better sales. As it stands, *F/A-18* is a truly great combat simulation. But, it is not a product for everyone, because the level of challenge that it poses may be too much for the simulation enthusiast looking for a quick thrill ride.

However, strictly judging it as a naval combat simulation, *F/A-18* may very well be the best of its kind ever released. The realistic carrier operations, missions, weapons, avionics and flight modeling all offer a level of challenge that the die-hard combat simulation enthusiast thrives for. Adding *F/A-18*'s solid multi-player support over the Internet, it is not only a great simulation of the F/A-18E, but also a superb multi-player combat simulation. With a built-in mission and campaign builder, this is a combat simulation that offers the best replay value you can purchase.

Best of all, most enthusiasts won't ever have to touch the Tools section in *F/A-18*, because others are already hard at work on new missions and campaigns that you can download for free on the Internet.

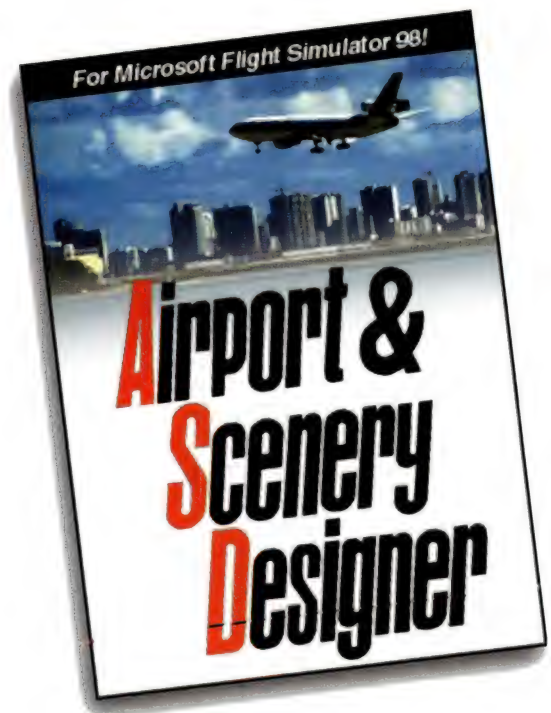
F/A-18 is definitely built for the hardcore combat simulation enthusiast. Even though *F/A-18* offers great features to ease the less experienced simulation enthusiast into the simulation, the lack of a more in-depth manual and better training missions keep it from being a simulation aimed towards a larger audience. But it is still a fantastic product, because it offers so much for those who take the extra time to learn what is needed to get the most out of it. It is well worth the time spent.

All in all, this is one "super" F/A-18E Hornet combat simulation from Jane's.

For More Information

Jane's Combat Simulations
<http://www.janes.ea.com>
SRP: \$39.95

Looking At The New Features of Airport & Scenery Designer



**By Phil
Paschutine**

Version 2.1 of *Airport and Scenery Designer* (ASD) is an FS 2000 update for version 2.0, which was released last year. Rather than list each of the menu commands and options, this review will look at the newest additions found in ASD version 2.1.

Common ASD 2.0 features and options are discussed in the Dec/Jan issue of *Full Throttle* magazine (pages 80-86) and in Tim Dickens' "Making FS 2000 Scenery with Current Design Tools" (pages 14-20). ASD v. 2.1 can open and convert .SCB map files from previous versions of ASD and compile them with new FS 2000 code.

While ASD 2.0 was a major leap forward in scenery design, it became obvious during the FS 2000 beta test that it would be hard to adapt to the new scenery code without a lot of manual source code changes by the designer. ASD 2.1, released a few months after FS 2000, is a "tour de force" that required a lot of work. It was created without the benefit of any SDK material from Microsoft. Most of the FS 2000

compatibility issues were addressed. Moreover, users will appreciate being able to convert their FS 98 scenery to the FS 2000 format and design scenery for FS 2000.

The ASD 2.1 upgrade is free for owners of ASD v. 2.0, offering many new features:

- ✈ The use of flattening polygons, making the "flatten switch" in the FS 2000 Scenery.cfg file unnecessary
- ✈ Continued support for scenery exclude files to erase the default scenery within a designer's scenery area
- ✈ Actual FS 2000 scenery coding for roads, rivers, ground polygons, coastal polygons and runways
- ✈ Ability to add elevation commands to all ground polygons
- ✈ Updated .BGL viewer allows designers to see and/or import default scenery in their ASD projects
- ✈ Scenery file identification grid finds the default .BGL files for a given geographic area

Phil Paschutine is an independent writer and reviewer. Please note that *Full Throttle* is owned and operated by Abacus, who is also the publisher of *Airport & Scenery Designer* (ASD).

Also, the Managing Editor of *Full Throttle*, Tim Dickens, was heavily involved in the development of ASD versions 2.0 and 2.1

Looking At The New Features of ASD

- ➔ Full support for standard *.BMP files, instead of the fixed palette *.R8 files used in FS 98 and before
- ➔ New macro 3-D objects formatted for FS 2000.

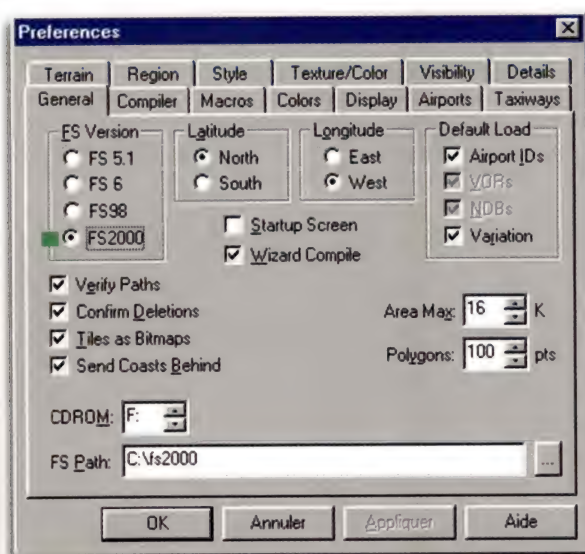
ASD does not yet support the ability to re-texture the new FS 2000 elevated mesh terrain.

Documentation

The 12-page manual update is in both Word (.DOC) and HTML formats. Beyond descriptions of the new features, readers will also find many design tips and solutions to common FS 2000 display problems.

New menu options

The **File | Preferences** menu command has had a major facelift. To begin with, the *General* tab includes an FS 2000 check box. But this doesn't come as a surprise, does it? ASD now creates and compiles scenery for all versions of Flight Simulator and, although it is not listed, for Microsoft *Combat Flight Simulator* (CFS) as well.

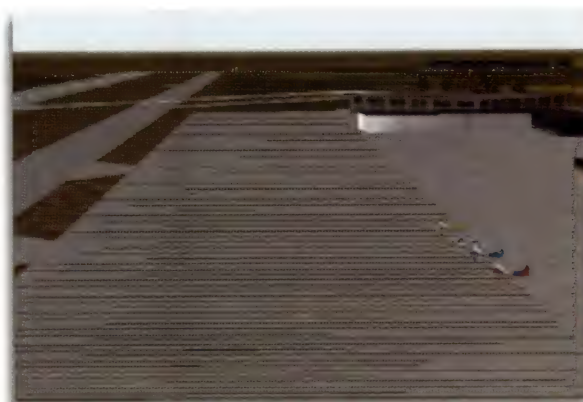


The general preferences menu in ASD v. 2.1

The Flattening Polygon

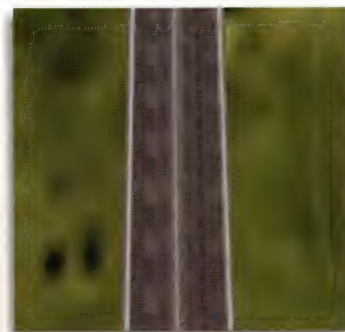
The first notable improvement is the automatic creation of flattening polygon files. FS 2000 has hard surface elevated terrain data that has small or large altitude variations over short distances. The result is that any visual scenery (section 9) ground polygons, which are flat, will tend to appear “broken up” or “streaked” on top of the new FS 2000 elevated mesh terrain.

The Microsoft design team addressed this issue by creating a *flattening polygon* in the exact same shape as the visual polygon being added to the scenery. The flattening polygon has no visual attributes. Rather, it re-defines the default terrain elevation within the polygon perimeter and also makes it perfectly flat. The flattening polygon also tells the simulator that the polygon shape being drawn on top of it should be drawn last, avoiding the “streaking” bleed-through problems seen using FS 5/FS 98 design tools. Using flattening polygons, the terrain is flattened with code contained within the .BGL scenery files, making the use of flatten switches in the Scenery.cfg file unnecessary.



The “streaking” effect seen on ground polygons using FS 5 – FS 98 scenery commands.

Without ASD 2.1, you can flatten a specific area using the *flatten switch* in the FS 2000 Scenery.cfg. But in this case, the scenery designer can be up against a wall, because only 10 flatten switches per scenery area are allowed in the FS 2000 Scenery.cfg file. Imagine an area with 50 airports and only 10 flatten switches. And the idea of flattening a large area and having all of the airports at the same altitude is sickening.

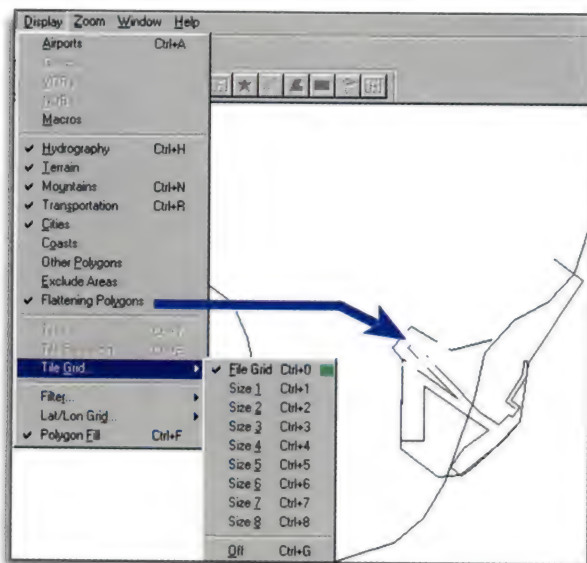


I will not get into the technical aspects of adjusting the FS 2000 elevated terrain, but I will explain how to make use of the new technology. This way newbies will be able to quickly port their FS 98 scenery to FS 2000.

Microsoft used the same kind of elevation data and charts that scenery designers have commonly used, and generally speaking, the FS 2000 default terrain altitude is within one or two feet of the published airport altitude. If the scenery designer has been paying attention to these published altitudes, the difference will be almost insignificant.

Looking At The New Features Of ASD

ASD 2.1 can *import* default airports and their polygons, and ASD will create new flatten polygons for them, as well as allow you to create new ones when necessary. You can also import default taxiways, runways/lighting and use them in your new scenery or as a template for just placing 3-D objects. The .BGL viewer is also very handy in determining the default FS terrain altitude and checking it against yours.



An FS 2000 flattening polygon as viewed in ASD v. 2.1

All *airport view* polygons declared as Airport Property will have a flatten polygon created for them. ASD 2.1 will create an additional scenery .BGL file with an "M" at the end of the filename. (E.g., scenery with a flattening polygon would be compiled as MYSCENERY3.BGL for visual elements and MYSCENERY3M.BGL for the flatten polygons.)

Geographical Features

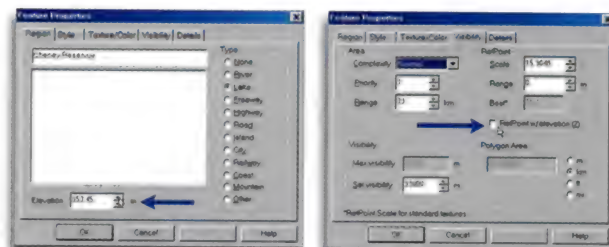
The geographical features like rivers and roads were designed to sit on top of the elevated terrain in FS 2000. ASD 2.1 uses the actual FS 2000 coding to create these features. Roads and highways, as shown on the right, can be rendered using custom textures or default Microsoft textures to show details such as center lines, stripes, etc.

Support for bmp textures

ASD can use .BMPs to texture all polygons, transportation, runways, buildings, taxiways, hangars and hydrography. FS 2000 has its own terrain texturing with night lighted bitmaps. Placing a standard visual polygon overlay will hide those night lights. ASD 2.1 solves that problem with an option to make a polygon visible only during daytime, thus preserving night illuminations.

Support for elevation commands

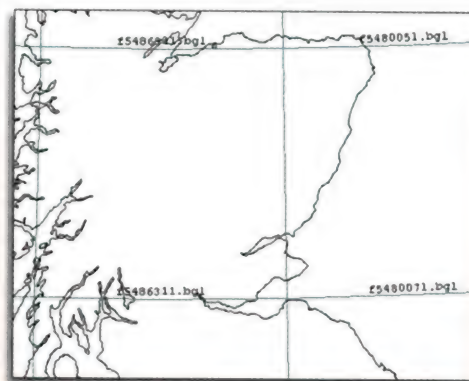
Sometimes adding an absolute elevation command to ground polygons improves their visibility on top of the default elevated terrain. ASD 2.1 enables this on the individual object's *Properties* page. Roads and rivers can also have elevation applied to them. This is generally not necessary, but it can come in handy when working with very lumpy terrain.



Absolute elevation can be added to ground polygons through the Region and Visibility tabs on the polygon's Properties page.

The .BGL file grid

Ever wondered which default .BGL file was used at your current ASD map position? One method was to keep the default FS 98 scenery data on disk, go to the desired location in FS 98, then rush to the cache folder and copy the file to another directory or load the .BGLs from the cache into ASD. This was a big headache, but these hard times are over! In the map editor, the name of the default FS 2000 .BGL file for your current location will be displayed on a grid, showing the file name and area covered.



The ASD default file grid

Map View Editor

The map editor has several new options. One of them is the single View icon, with which you can zoom up or down with either a left or right mouse click. Before now, ASD had two zoom icons, and it worked fine. Some will find the new

Looking At The New Features of ASD

single zoom feature a big help, while others may not. A less "visible" option is the improved coastline tool using default FS 2000 scenery coding to flatten and draw coastlines.

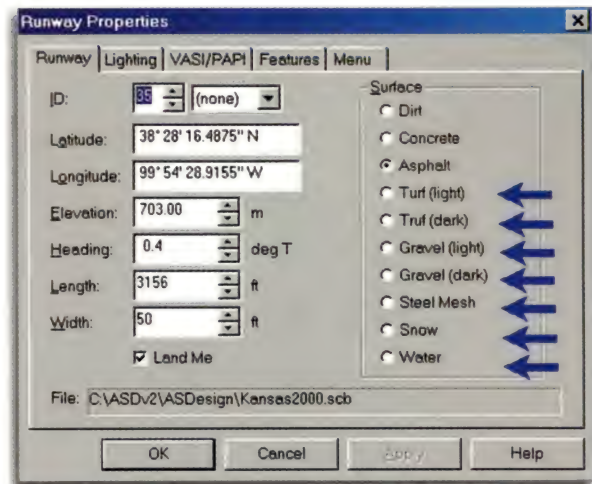
The Exclude Tool

Using the exclude tool in ASD, like previous versions, will erase default visual scenery objects within a defined area so you will not need to use the *exclude switch* in the FS 2000 Scenery.cfg file. The ASD exclude tool works fine, although you cannot use it like you did for FS 98 and before, where you could check all features in a single exclude. You now need to create an exclude for each category: Static scenery, NDB and VOR and ILS. In FS 2000, ATIS messages are implemented completely differently, and they cannot be excluded.

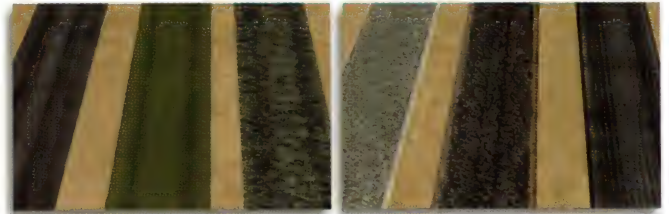
Importing FS 2000 data is limited to runways, taxiways, polygons, buildings, nav aids and ILS systems. Default FS 2000 3-D objects drawn with library calls are not imported. The good news is that ASD 2.1 *decompresses* the default .BGL when importing its data, so you do not need to unzip them with Microsoft's bglzip. You can still use it to compress your finished .BGL files (ASD 2.1 does not compress them).

New Runway Support

The really new features are found in the airport editor. Now you no longer have four, but *ten* new runway surface types. FS 2000 added these new types, and ASD supports these new runways. Apart from the usual dirt, concrete and asphalt types, you now have light and dark turf that replace the old grass runway and two types of gravel surfaces and steel mesh that you can put in sandy areas. Let's not forget the "water" runway for your seaports, and a real runway with snow. Of course, FS 2000 cannot simulate slippery surfaces, so if you want more realism when landing on a snowy runway, don't apply brakes!



New runway types for FS 2000



Samples of the new FS 2000 runway surface types

Tri-color and pulsating Visual Approach Slope Indicators (VASI) have been added as well. Additional options are primary and secondary VASI/PAPI lighting and STOL markings. ASD still features pilot-controlled lighting (PCL)

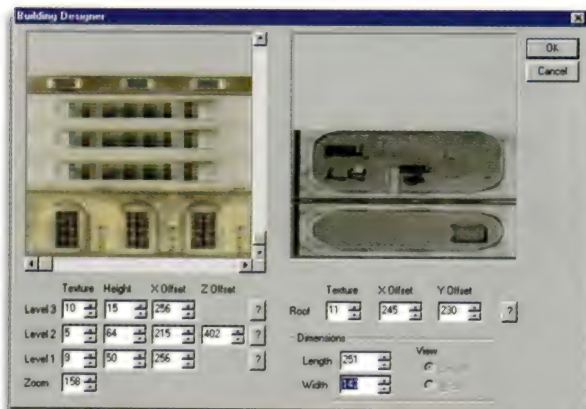
One flight simmer posted a message on a news group asking why he couldn't find Maptools.zip in the ASD 2.0 CD. It is true that although mention of the files is made in the v2.0 manual, these tools are not necessary for the USA because the "assembling" of transportation, hydrography, etc., has already been done. Unless I can be proven wrong (and I wish I could), there are no similar foreign Web or FTP sites with this kind of data. In short, only the US maps have this level of data.

for FS 2000, but in order to turn the lighting on and off, the FS 2000 patch must be installed (http://www.microsoft.com/games/fs2000/downloads_fsupdate.htm).



Samples of new macro objects with FS 2000 lighting effects

Looking At The New Features Of ASD



The new FS 2000 style building tool

Custom Building Tool

The second innovative feature is adding support for FS 2000 custom buildings. There are three building styles (flat, peaked and sloped). A building is made up of four parts: base, center, top and roof, and since there are 256 different building textures to choose from, the number of buildings you can create is almost endless. Textures are applied to each part with the sliders. Some will find using the sliders to be like trying to figure out an electronic diagram, so there is a second option to graphically apply the textures to the length and width of the building.

One option is missing in ASD 2.1. Several of the other scenery designers I am currently reviewing have been building libraries from default FS objects. This library of objects could be useful in either map or airport view.

3-D Macro Objects

ASD 2.1 contains over 290 macros, with 70 FS 2000 specific, easily recognizable by the “*fs2000” marking in the macro preview window. Some complex macros, such as static aircraft, need more than a 16K per object Scasm buffer, so set your area max above 16K in the **File | Preferences General** menu. Other objects, like airport beacons, have a rotating white/green light. The new objects feature the FS 2000-style lighting effects as well.

Conclusion

ASD version 2.1 is the versatile design program for all versions of Flight Simulator and for *Combat Flight Simulator*. Expert designers will love its new and improved features. Novices who take time to read the documentation will find that they can build like the pros after a short time.

For More Information

Abacus Software

SRP: \$79.95 (Free for ASD 2.0 users and \$33.50 for v1.0 and v1.1 registered users)

<http://www.abacuspublisher.com>

E-mail: sales@abacuspublisher.com

Toll Free: 1-800-451-4319

They said it!

“No flying machine will ever fly from New York to Paris ... [because] no known motor can run at the requisite speed for four days without stopping.”

Orville Wright, around 1908

“Everything that can be invented has been invented.”

*Charles H. Duell, Commissioner
U.S. Office of Patents, 1899*

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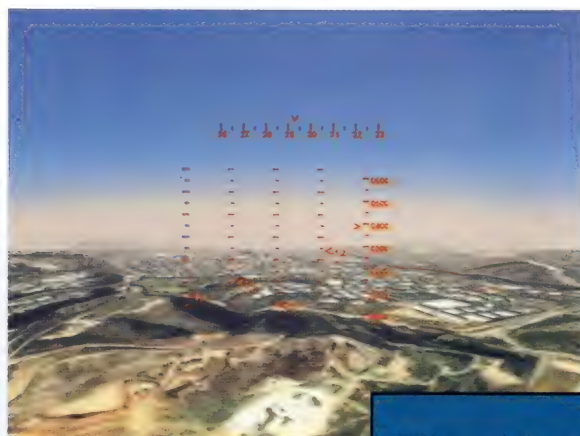
Flying with Hangsim

Hangsim is a stand-alone free flight simulator for powered and un-powered gliders, paragliders and hang gliders.

This new version from Wilco is based on the shareware program by Ilan Papini.

It features everything one could wish for in terms of photorealistic textures, flight and weather dynamics.





The main program window



Lets take a close look at it and see how it performs.

Installation and manual

The install program copies the necessary files to their respective folders and uses a little over 200Mb of disk space. Direct X7 is included so if you do not have it yet, now is the time to install it.

The 30 page manual has everything you need to started, including configuration settings, aircraft data, tips on flying the 7 aircraft, description of the instruments, a presentation of the flight areas, and a brief chapter about meteorology for thermal and ridge flying. Since you will rely on the winds and thermals a lot, I advise you to take the time to read these pages. You will find hotkeys used by the program in the back of the manual.

In flight you can use hotkeys to accelerate time, increase or decrease your altitude, go in slew mode, show wind information, activate the parachute, switch the AP, hide/display the instrument panel, etc.

The main program window

The main window has menu options for Views, Panel, Settings, Change of Glider, Time, Weather Environment and Panel. The Views menu includes Cockpit, Chase, and Map Views. The panel options include Large, Small and HUD (Head Up Display) — see examples above.

Aircraft

Hangsim includes the following free-flight aircraft (see pages 64-66 for examples):

- Low powered glider
- High performance, un-powered paraglider
- High performance, un-powered competition glider
- Medium performance powered hang glider

➤ High and medium performance un-powered hang gliders

➤ High performance powered microlite.

Apart from their respective virtual cockpits, control bars and brakes (for the paraglider), all share the same instrument panel, with an airspeed indicator, vertical speed indicator (VSI), tachometer and compass. If you prefer to use a HUD, it comes in several colors and displays compass, airspeed load factor, tachometer, VSI, and altitude indicators. The microlite and glider displays a G-meter, compass, timer/points/position and a Global Positioning System (GPS). The GPS displays bearing, track, distance to the next waypoint, speed, estimated time to the next waypoint, current time, current altitude, and rate of climb/glide ratio.

You can also create or personalize the flight characteristics of an aircraft if you wish.

Flying with Hangsim

Hangsim is not a soaring flight simulator, nor was it meant to be. So, there is no Stöcker calculator, target speed, variometer or MacCready ring. There are no official “starts” for competition, no flaps, and no ballast.

You can control the aircraft with a joystick, a mouse or both. For the paraglider, glider, and microlite you move the mouse or joystick in the direction of the turn. When flying the hang glider the movement must be in the opposite direction of the turn. This is because in real life the control bar is pushed to the right to make a turn to the left and to the left to make a turn to the right.

You can use the mouse or a joystick button to have a 360° look around. To take off in an un-powered aircraft you “run” to achieve lift. For the powered gliders you “throttle up”.

When encountering important updrafts, downdrafts or when going too fast, the glider will break up or go into an unrecoverable spiral. This can happen to the hang gliders and the microlite as well, but you can repair them by pressing the **(F8)** key. I noticed that I could not make the paragliders go into unrecoverable spirals. They remained stable even in strong winds.

If you need company, you can include up to six dynamic gliders, each with a specific flight pattern. The dynamic paraglider and hang glider pilots are animated! His legs move when he runs to become airborne and his arms and legs will move in flight.

Four simulation modes

There are four modes of simulation. For Challenges, Competition and “Just for fun” a map displays the flight path



➤ *Free flight* has a choice of 16 flight situations, in 7 typical French and Californian locations.

➤ *Challenges*, 35 in all for beginner, intermediate and expert levels. There are 5 lessons to learn how to control your glider, do coordinated turns, circling, fly in updrafts and downdrafts, and ridge soaring. The remaining 30 are nice to do and introduce a variety of weather conditions and aircraft.

➤ *Competition* is my favorite option, and one I feel many glider pilots will enjoy. There are three levels of competition, with 14 situations. *Beginner level* has races to see who goes the farthest. *Intermediate level* is a bit harder, because you must use thermals to stay aloft, and in some cases use the GPS in fog situations. *Expert level* adds moderate to strong winds, and if you are not careful, the glider will enter a deadly spiral and break up! At expert level, your competitors will be tough to beat and may come right at you. So keep an eye out for an irate pilot! Each time an opponent crosses a waypoint or lands it will be announced on the screen.

➤ *Just for fun* includes six situations that are good for relieving one's tension. Your aircraft is fitted with rockets and all you have to do is blast 'em! Easier said than done though.

In Challenge and Competition modes, you can call a moving map showing your heading, position to the next waypoint, and your opponent's position. In free flight, the map just shows your position. In Just for fun it shows only your position in relation to the other aircraft.

You can also make your own situations with maps. Just set a departure point, take off position, waypoints, an arrival point, and you have a situation. If you are a competition glider pilot you will want to create round trip, triangle, polygon and timed circuits. Your waypoints will automatically be inserted on the map.

Examples Of The Free-flight Aircraft

Low powered glider



Hangsim includes several types of free-flight aircraft, including Low powered glider, High performance un-powered paraglider, High performance un-powered competition glider, Medium performance powered hang glider, High and medium performance un-powered hang gliders and High performance powered microlite.

High performance, unpowered paraglider

High performance, un-powered competition glider



In Hangsim

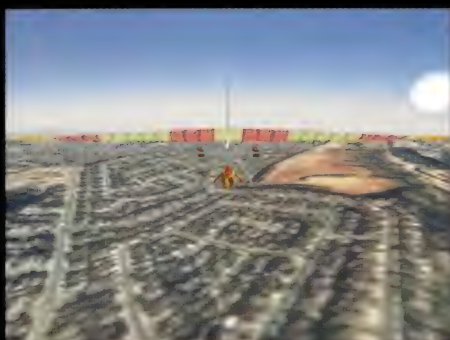
High performance powered
microlite

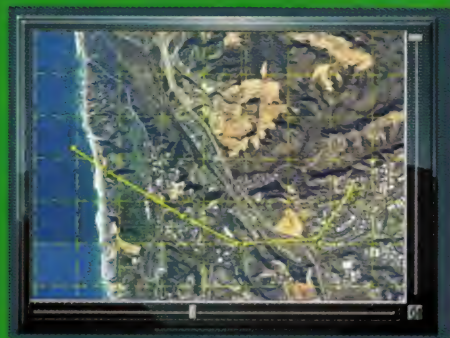
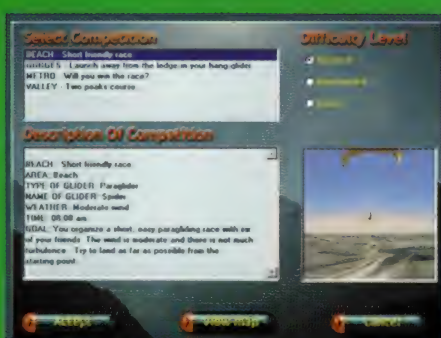
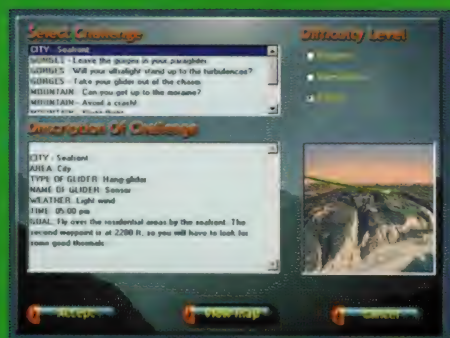


Medium performance
powered hang glider



High (above) and medium
performance (below)
unpowered hang gliders

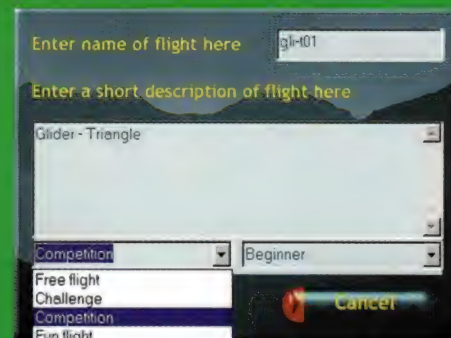




*(Above and right)
Competition is one I feel
many glider pilots will enjoy.
it has three levels of
competition, with 14
situations.*

*(Above) Challenges for
beginner, intermediate and
expert levels.*

Four Simulation Modes Samples



A logbook keeps track of dates, type of glider, accumulative flight time, scenery area and flight as well as the score. It is multi users so you can add additional names.

Simulator settings

Hangsim can be run in full screen or window mode. Resolutions range from 640x480x16 to 1280x1024x32. The sounds are good and can be adjusted separately (just in case you prefer a deafening engine noise to the wind howl). There are also very relaxing MIDI files to accompany your flights.

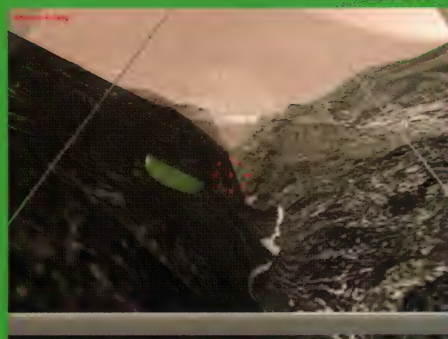
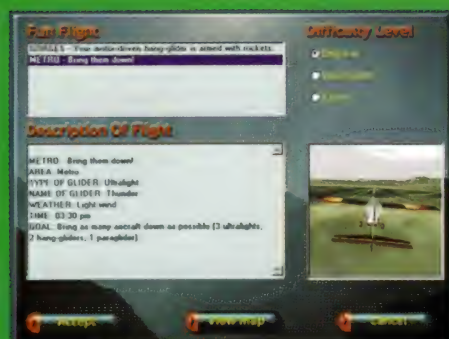
Scenery and Weather

The scenery is based on photorealistic bitmaps. The photo-textured scenery is very professional, and better than some other I have seen. The scenery areas are very distinctive

renditions of France, including the Alps, the Gorges du Verdon, and the Puy de Dome area with its famous volcanoes. The beach, city, metro and ridge sceneries are in California.

You will see aircraft shadows, and sun reflections on the wing and on the virtual instrument panel. The views in flight are stunning, because the virtual instrument panel does not intrude. There are objects like buildings, trees, bridges, waypoint gates, and windsocks (objects). If you are worried about the frame rate, you always have the possibility to hide objects or optimize the terrain.

Hangsim is open to scenery modifications, allowing you to create additional scenery areas. Although it says on the back of the box and in the manual that you can create your own gliders or scenery, the CD does not include any design programs or supply information on how to do this. The manual



(This page) Just for fun includes six situations in which your aircraft is fitted with rockets and all you have to do is blast 'em!



Quick Scenery & Weather Samples



directs the user to the programmer's website. Unless there is an update of some sort to include both scenery design tutorials and tools, non-Internet users are left out.

Weather parameters allow you to choose the number of clouds and their base/top, low or unlimited visibility, fog, and textured clouds. The wind options are important, because you can set the number of thermals. Beginners will no doubt want to add many thermals and make them big. Being able to see your thermals is a big help when learning how to spiral up the thermal or when thermal hopping. Unless you want to flip over, the updraft and wind velocity should be set to reasonable values. Confirmed glider pilots will like the thermal drift option.

Other weather dynamics are related to cumulus clouds, where it is best to err on the side of caution, since you never want to fly near them unless you are a candidate for suicide.

Flying with Hangsim

Bugs

There are very few bugs in the simulator, but they are worth mentioning. There is a repetition of textures outside of the main flying area, and some high terrain scenery may look odd. I have also seen texture bleedthrough when looking down in the cockpits and on occasions I experienced weird sky color changes.



Conclusion

Hangsim will provide endless hours of sheer flying fun. The aircraft flight models are quite convincing, and with the exception of the few bugs mentioned, the scenery is excellent. Whether young or old, if you are looking for a little diversion, or want to learn the fundamentals of free flight, Hangsim is something you should look at.

For More Information

Wilco
Internet: <http://www.simw.com>
Author: Ilan Papini
Author's site: <http://www.hangsim.com>
Suggested Retail Price: \$35.00

System Requirements

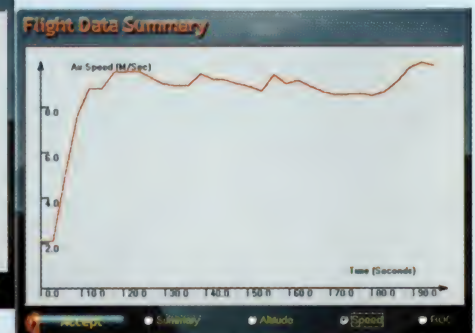
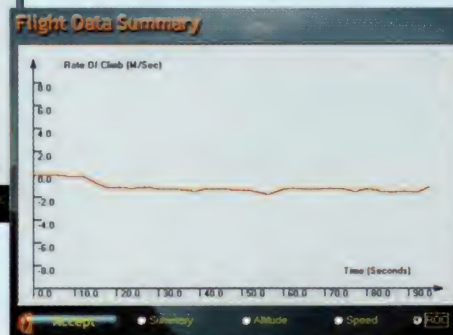
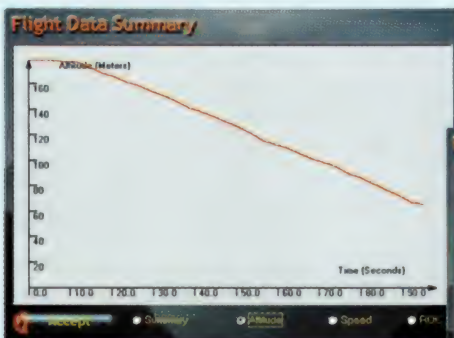
- P200MMX
- 32 Mb RAM
- Sound card
- 3D graphic accelerator card compatible with Direct3D
- 190 Mb free hard disk space

Scenery creation tutorials are available at:

<http://space.tin.it/sport/snmpv/hangsim/build.htm>

Download the necessary scenery editors from:

<http://space.tin.it/sport/snmpv/hangsim/download.htm>



If you care to see how well you performed, a flight analysis display for altitude, speed and ROC/ROD will always be of interest. Flight data can be stored for later viewing.

Product Reviews

Reviewed In This Issue Are:

***Pacific Combat Pilot* (pg. 69)**

***Battlechair* (pg. 71)**

***ACP Compact* (pg. 72)**

***Courchevel 2000* (pg. 74)**

Pacific Combat Pilot

By Phil Pashutine

Add-on releases for Microsoft *Combat Flight Simulator* (CFS) take virtual pilots to new battle theaters beyond the default program. A lot of aircraft and missions are now available, as well as expanded theatres of operation in the Pacific and Europe. *Pacific Combat Pilot* is The Associates' third volume for CFS, after *N°1 Attack Squadron* and the superb *Luftwaffe Collection*.

Installation and Documentation

The installation program copies the necessary files to the CFS folders. The forty-three-page documentation has the usual setup and install instructions found in any manual, plus history and specifications for each aircraft. There is also a brief description for each of the 20 missions.

Features

Pacific Combat Pilot comes with 27 Allied and Japanese aircraft, all with animated parts. Since most of the action is based around Saipan and Rota, Pilot's GmbH's *Pacific Island FS 98* scenery was used.



The island of Aslito

The instrument panels have very impressive custom gauges with Japanese markings. Also, all will appreciate that each aircraft comes with its own sound files. The aircraft are easy to fly—perhaps too easy from the perspective of how these vintage warbirds really flew.

The texturing of the aircraft in this package disappointed me. Several of the aircraft have cartoonish textures. I found it odd seeing green, blue, red and yellow dots here and there. Unless it was my video card (Viper 550 TNT), I believe some components shifted when I switched views, and parts of the cockpit bled through when in spot view.

Out of curiosity, I compared these planes with other aircraft for CFS. Much to my surprise, some of the wing width and fuselage length measurements varied greatly. Also, several of the aircraft have their throttle quadrants stuck to the side of the cockpit canopy, and mixture/propeller controls that should have been hidden are partially seen.

Pacific Combat Pilot does offer three new and interesting aircraft:

- ✈ The Mitsubishi Ki-200 Shusui with its permanent rear engine flame and unusual flaps sound
- ✈ Another Ki-200, designated "J8M" for the army
- ✈ An adaptation of the Messerschmitt Me 163B Komet.



The Mitsubishi Ki-200 Shusui

By the time of the Japanese surrender, Mitsubishi had built a total of only seven Shusui aircraft. The Mitsubishi Ki-46 Dinah was an excellent high-altitude reconnaissance aircraft, and the Kyushu J7W1 Shinden, an interceptor fighter with a canard configuration, had been designed to go after the American B-29s.

The 20 "search and destroy" missions over land and sea are accessible from the Luftwaffe mission screen. *Pacific Combat Pilot* proposes two campaigns: the invasion of Saipan and the defense of Saipan. In combat the enemy is very cunning, and you better check your six unless you want to end up as minced meat. Depending upon which side you are flying for, you can head for the American or Japanese aircraft carrier and try your skill landing the birds with the arresting hook: easier said than done!



Japanese aircraft carrier

The scenery has been designed for the FS 98 flat-tile world terrain, and not the elevated mesh terrain used in CFS. Although some of it was rendered well given that state of technology, one would expect a commercial add-on release to have the same level of technology as that found in the default CFS terrain.



The Kyushu J7W1 Shinden

Conclusion

Despite some texture and design peculiarities that are not of the same superb design and quality found in The Associates' Luftwaffe collection, *Pacific Combat Pilot* will interest flight simmers who are looking for unusual aircraft to add to their CFS aircraft library.

For More Information

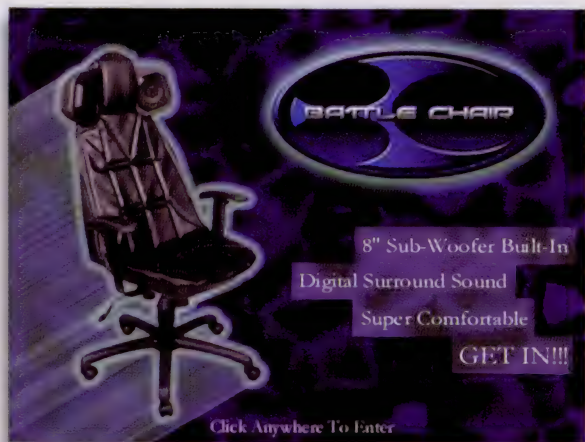
The Associates
mail@theassociates.co.uk
<http://www.flightsim.co.uk>
 Suggested retail price: £24.99

Battlechair

By Adam Howe

Until now, the act of sitting in front of your computer was the only aspect of playing computer games that could be labeled "boring." With amazing 3-D graphics, powerful multimedia sound systems and devices of every sort to attach to your computer or game console, the chair you are sitting in was often overlooked! Everyone who has a computer has a chair, so why not make that chair part of the experience?

The Battlechair from Interactive Seating makes sitting by your computer a fully immersive environment by incorporating an entire speaker system into a comfortable and adjustable desk chair.



Visit <http://www.battlechair.com>

One thing that is most impressive about the Battlechair is that you are not limited to using it with a computer. The Battlechair comes with a surround sound amplifier that receives input, amplifies it and routes it through two 30-watt, 5 1/4-inch three-way speakers and an 8-inch, 100-watt woofer. Both are mounted in the chair itself. The output source can be your computer's sound card or the RCA outputs on a video game console. For example, you can use the Battlechair with a Nintendo 64, Sony Playstation, Sega Dreamcast or even a portable CD or MP3 player.

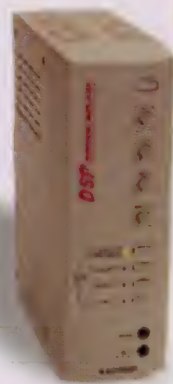
An included connection cable plugs into the speaker output jack on your computer's sound card, making attachment to your system quick and easy. The amplifier has three sound settings:

- ✈ Game/Stereo Simulation
- ✈ Concert
- ✈ Theatre On/Off

Most users will prefer the Theatre *Off* setting, but the others will add unique sound qualities to your games.

Setup

Assembly is quick and easy. If you can assemble a puzzle, you can assemble this chair. You only need to mount the seat to the chair base. The base comes pre-assembled, so you only have to drop the chair until you hear a click. The arms slide in the sides and are fastened with a knob that screws in to hold the arms in place. The knobs allow for the arms to slide in and out.



The final task is to plug the chair into the amplifier. The eight wires inside the provided 15-foot cable are color coded for easy connection. Once the wires are attached to the amplifier according to the directions, the other end of the cable is fastened to the back of the chair by inserting the plug, then screwing down a locking collar to ensure the plug will not come loose. From there, just plug in the amplifier, hook up the computer or game console and push the power button! I recommend that you check the volume, bass and treble controls to be sure they are all turned way down before turning it on.

Features

The arms of the Battlechair have a nice feature that sets this chair apart from other sound-enhanced seats: the action trays. The action trays are 9-inch circular pads that mount to the arms of the chair, allowing you to mount your joystick or mouse. They also tilt and can drop out of the way to the side.

Another nice feature is the location of the plug. It attaches to the back of the chair, so you are not tripping on it when getting in and out of the chair.

As you sit in the chair, the seat back comes up to the back of your head. The top of the chair has two 5 1/4-inch speakers pointed toward your ears on both sides. The 8-inch woofer is mounted to the bottom-rear of the seat, pointed at your lower back. When the 3-D sound action takes place in your game, you will feel it all over your body.

Product Reviews



The small amplifier unit can easily be placed out of the way. The volume of the chair, which is adjusted on the amplifier, can get very loud. For a lot of users, this may be way too much power. But that is what the volume knob is for!

I recommend turning the power on with the volume down, and then adjust it from there. The bass is strong and can feel really weird if it is set too loud.

If you like speakers that beat your heart for you, then turn up the volume. The only downside is the inability to control the volume from the chair. I tip back and relax while I fly, but to adjust the sound or volume, I have to lean forward to reach the amplifier.

Cost

The Battlechair costs \$399.00 dollars, plus shipping (and tax in California). Shipping can run from \$25-\$40 per chair, depending on where it is being delivered. For those on a tighter budget, a version of the chair without the arms and seat pad can be ordered for \$299 dollars. The Battlechair can be ordered on-line at the Interactive Seating Web site.



Conclusion

I found the Battlechair to be easy to assemble and easy to use. The ability to use the chair with any device that has an audio output makes it compatible with computer sound systems, game consoles and CD/MP3 players (with a bit of creative wiring, I even hooked up my guitar to the Battlechair!).

The effect of the amplified sound and the way it is directed toward you within the seating environment adds a new dimension to both general aviation and combat flight simulation. The action trays are great for holding a joystick or even a mouse. The Battlechair is a very good addition to any flight sim enthusiast's peripheral setup.

For More Information

Interactive Seating
Internet: <http://www.battlechair.com>
Phone: (805) 650-9956
Fax: (805) 650-0059

ACP Compact

By Doug Horton



ACP Compact is a very interesting hardware peripheral for PC flight simulation from Aerosoft GmbH of Germany. Its various knobs, switches and buttons operate all major flight simulator radio and autopilot functions plus gear, flaps and other controls.

The ACP Compact is "daisy-chained" seamlessly into the computer keyboard connection. When you operate its knobs, buttons and switches the ACP Compact generates keyboard commands that correspond to the applicable commands for six flight simulation programs, including Microsoft *Flight Simulator 98* and *Flight Simulator 2000*, Terminal Reality's *Fly!*, Sierra *Pro-Pilot*, Looking Glass's *Flight Unlimited* series and *AS2*.

A small CPU inside the unit translates the commands. For added realism, two large Velcro strips let you mount the ACP Compact to the side of your desk or your monitor.

The manual includes complete instructions in both German and English. Depending upon which flight simulation program you're using, the ACP has 29 control functions, including:

- ✈ COM-NAV frequencies
- ✈ OBS transponder codes
- ✈ ADF frequencies
- ✈ Autopilot functions
- ✈ Heading hold
- ✈ Nav hold
- ✈ ILS approach hold
- ✈ Altitude hold
- ✈ Course pre-select
- ✈ Altimeter settings



The ACP Compact controls

- ✈ Setting gyro
- ✈ Landing and position lights
- ✈ Strobe lights
- ✈ Pitot heat
- ✈ Trim settings
- ✈ Carburetor heat
- ✈ Prop settings
- ✈ Mixture adjust
- ✈ Gear lever
- ✈ Flaps switch

Installation

Following the manual, you install the ACP Compact by turning off your computer and unplugging your keyboard cable. Next, you plug the longer ACP Compact connector cable into the computer's keyboard socket, and then you plug the keyboard into the shorter ACP cable. The cables have the older large connectors, but two adapters are provided for using PS2-type keyboard connections. Next, turn on the ACP System switch, then turn on your computer. Now you are ready to start a simulator program.

I started FS 2000 for my first test, and the ACP worked immediately! Lots of indicator lights came on, and I quickly turned some knobs and tried the flap control. They all worked!

If you have any other keyboard pass-through connectors, I found that the order of connection is important. In my case, the daisy chain of my keyboard cable and the ACP Compact also includes the keyboard cable pass-through connectors for two CH Products peripherals: a CH Throttle and an F-16 Fighterstick.

I successfully connected all four peripherals. To make things work, I needed to plug the longer ACP cord into the computer's keyboard socket first, then plug my two CH pass-through connectors into the shorter ACP cord, then plug the keyboard cable into the CH connectors. It took just a few minutes to experiment and verify which order worked, so it was an easy installation. Mastering the subtleties of the various controls is slightly more advanced, as I found out next.

Operation

To minimize space and complexity, and perhaps cost, every knob and button of the ACP has two functions, classified as Sets 1 and 2. Indicator lights change for Set 1 and 2 functions, providing visual cues to which is operating.

As an example of the functions, Set 1 controls Com 1, Nav 1, ADF, OBS 1, Transponder settings and autopilot buttons. There is also a standby frequency-changing button for each COM and NAV function, as supported by each simulator program. Set 2 controls Com 2, Nav 2 and OBS 2. The buttons that controlled transponder settings for Set 1 now control trim, carburetor heat, prop and mixture. The buttons that control autopilot functions in Set 1 now control landing, nav and strobe lights, plus pitot heat and fuel pump. The three knobs that control ADF in Set 1 are used in Set 2 to set the heading bug, barometric pressure and gyro heading. The flaps and gear controls operate whether Set 1 or 2 is selected.

These functions vary depending upon the simulator being used. The CPU "brain" of the ACP holds information on the six supported simulators, and it's reset for each by using the System On-Off switch in conjunction with the buttons that control the autopilot functions in Set 1.

The ACP Compact has two sets of functions for FS 2000. The manual refers to the default set as Plug and Play, which is in use when the system is turned on without any ACP buttons pressed. An extended set of functions is available for FS 2000 if the system is turned on with the AP button pressed, but the user must manually replace certain lines in the FS2000.CFG file to map new keyboard functions. The manual contains complete instructions on how to do this, and a copy and paste section for the FS2000.CFG file is contained on the CD-ROM.



ACP Compact mounted on the side of the monitor

Design Issues

I wondered about a few aspects of the ACP design. These are not big issues, but I assume the users who might purchase this equipment are also into details, so I'll share my thoughts.

First, the System switch must be on to provide electrical continuity to the keyboard. That means the ACP is on all the time, unless you disconnect the cables, which should be done with the computer turned off. While it seemed to me that having it on all the time might be unnecessary, Aerosoft says the ACP lights are the same as keyboard lights, which are designed for long life, so it's not an issue.

Second, I found the knobs a little imprecise, particularly while trying to set bearings in OBS 1 and 2. It was difficult to set the bearings I wanted, and it took some getting used to.

Third, the label layout and printing does not correspond directly with the way it works for setting radios. I'm sure this is intended to increase the "realism look" by appearing as the real radios might, but it may confuse some users. For example, the COM and NAV knobs appear from the label to each control the entire frequency of primary and standby frequencies. This could have been done with dual-purpose knobs, like on real radios. Instead, the two knobs control the digits to the left and right of the decimal point separately. This may not be clear, but trust me that it doesn't function like it looks, though it's easy to learn the actual operation.

Finally, it seems like the "0, 0, 2, 1" on the label above the transponder buttons is the familiar VFR "Squawk 1200" printed backwards, though the buttons do work correctly left to right with the aircraft panel transponder functions. So, the left-hand pair of transponder buttons scrolls the thousands digit up and down, though the printing suggests the rightmost pair controls the thousands digit.

Summary

I found the ACP Compact extremely easy to use and an enhancement to the flight simulation experience, albeit at a cost that some may not wish to bear. It adds a realistic "feel" to flight simulation, virtually eliminating mouse clicking on the control panel. Based on the cost, it seems that this equipment is targeted for the really hard-core users of PC flight simulators. Yet, judging from the number of worldwide flight simulation enthusiasts, there are certainly some who will buy and enjoy this novel equipment. If you can afford the price, the ACP compact certainly adds to realistic flight simulation.

For More Information

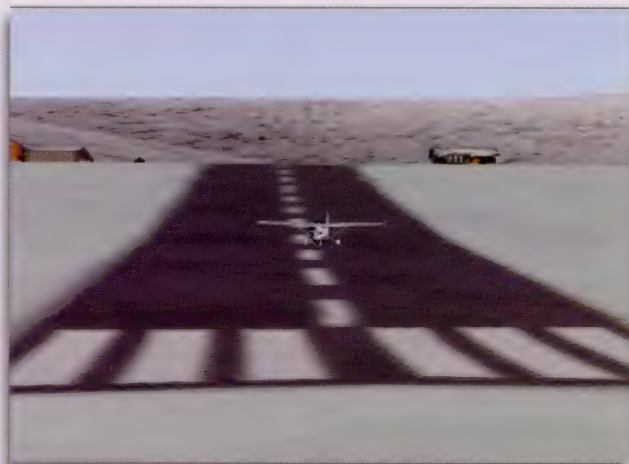
ACP Compact by Aerosoft
<http://www.aerosoft.com>
SRP: \$300.00

Courchevel 2000

By Phil Paschutine

Ever notice how desperately flat our FS runways are? They have the same altitude from one end of the runway to the other, with no concave or convex shapes. At most airports, the entire area around the runway is almost perfectly flat.

While it makes sense to build a runway on a flat and level surface, many of the world's runways have dips or humps. In the outback, runways are laid as best they can be. Some "runways" are just mowed areas or naturally flat spots big enough for an aircraft to land on. These are located on all types of terrain, but the most interesting are found in mountainous areas. More often than not, their surfaces are very irregular and uncomfortably short and narrow. Other mountain airfields have a hard-surfaced runway that follows the natural slope of the terrain on which it is laid. France has about 63 *altisurfaces*, located mostly in the French Alps. An *altisurface* is an area in the mountains where an aircraft can take off and land, but it is not classified as an airfield.



The sloped runway at Courcheval

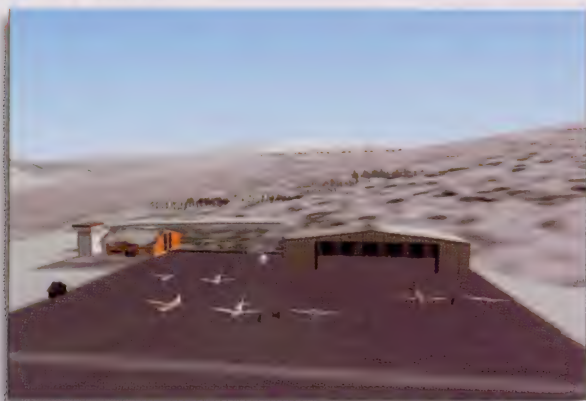
Until recently, it was not possible to land at any of the FS altiports. They were either missing or just a flat runway sitting on top of a ground tile. Several third-party mountain airfields have been designed with varying degrees of success. But not until the release of FS 2000 has it been possible to include a runway .BMP on the default hard-coded terrain that allows you to land. However, that hard-coded terrain doesn't follow the real elevation points, and while

you still have a slope, you would be missing much because your runway wouldn't have the same slope as its real-world counterpart.

With altiport enthusiasts in mind, the Rieffer Brothers have designed an interesting micro scenery: the *Courchevel 2000* altiport.

Installation and Documentation

Download the file from their Web site (www.simmarket.com/online/courchevel) and unzip it to the FS2000\Scenery folder. The installation provides the necessary sub-directories. You will then need to add the new scenery to the FS 2000 Scenery Library. The install instructions (in both HTML and .TXT formats) outline this procedure. You can also check our guide to FS 2000 scenery installation in the tutorial section on our Web site at <http://www.ftmagazine.com>.



Static scenery structures at the airport

Static and Dynamic Scenery

A few airport buildings are scattered around the airstrip and on the Crête des Gravelles mountain slope nearby. The buildings on the mountain opposite the airport are close to the ski slopes, and you can even see the ski lifts. The night scenery reveals multi-colored lights on the ski slopes that suggest torch bearers are enjoying an evening ski.

The designers have included a 3-D mountain representing the Courchevel airport area. The real Courchevel airport has a runway 1,740 feet long, divided into three parts. The landing zone starts at 6,369 feet altitude (6,556 feet in the scenery) with a 12.5% slope for the first 450 feet. The second part of the runway has an 18.5% slope for 775 feet. The "camel hump" is at 6,564 feet with a 9% slope for 180 feet. The remaining portion is flat, at an altitude of 6,580 feet (6,686 feet in the scenery).



Torch lights on the hill side

A profile view of the new scenery runway shows that it is convex with a 5% slope on either side (65 feet on both sides), and two 2% slopes divide the 130 feet wide runway.

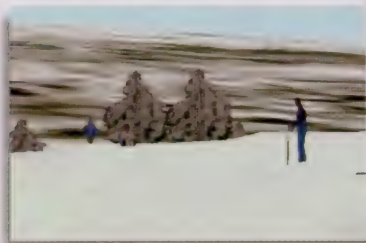


The real Courchevel runway

You will find some buildings, aircraft and even people on the airport apron. Characters change with the seasons. During the winter season, skiers take over. You'll see cows during the summer. But you will have to go to the Crête des Gravelles to find other buildings. Although night VFR is forbidden, arrive at dawn to check out the sights, but bear in mind that the airport rotating beacon will not come on until 6:34 am GMT (FS bug).

Dynamic scenery consists of two service trucks and one bus moving about their business on the airport grounds. Watch that you don't ram one of them when you land! I could hardly suppress a laugh when I saw the "man" walking from the hangar to the main building. The idea to have a moving man is pretty innovative, but the way he moved really gave me a good laugh. Many other people inhabit the airport grounds, so you will need to watch out for them when you taxi.

The cities that act as VFR entry points and the many ski lifts and telecabins close to the airport are missing.



Watch out for skiers!

Visual Bugs

I noticed that the "people" would vanish when I approached. With the crates in the apron area, the texture would "peel" away. This occurred with a Viper 550 video card. I did not encounter such problems with a Xantor 32 video card. There was also some bleed-through in certain places where new 3-D terrain was added to the default.

Overall frame rates were just OK, but considering the small number of 3-D objects in the airport area, I was expecting better than the 9.9 - 12.3 frames/second I experienced.



Static aircraft scenery at Courchevel

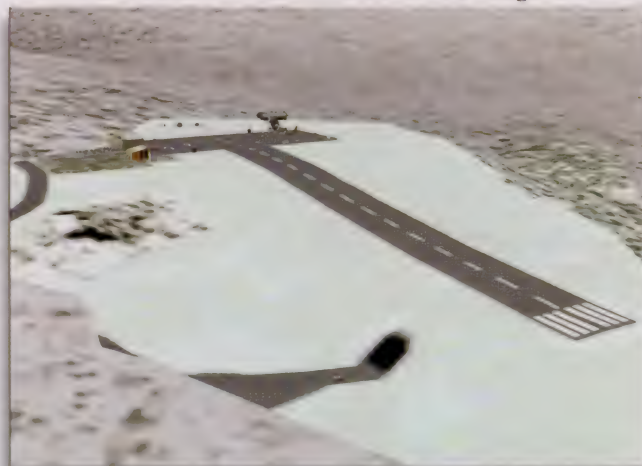
Take offs and landings

Take offs and landings make *Courchevel 2000* an interesting scenery add-on. I admit that testing *Courchevel 2000* got me addicted to low-speed flight and mountain flying. I flattened my aircraft on my first landing before I remembered the "spot-method landing technique." You will need to know all about short field procedures, like upwind, downwind and crosswind landings in order to land that aircraft on a 50-foot spot every time. Mountain flying involves more than this, and I have voluntarily

limited the description of the procedures and adapted them for FS 2000. You can find a beginner's guide in the tutorial section on our Web site, <http://www.ftmagazine.com>.



The airport blends in very well with the default scenery and includes seasonal texture changes.



Conclusion

Courchevel 2000 suffers from too few scenery objects, and since it is sold online, the authors would be wise to upload a patch with additional objects and the missing towns. I recommend *Courchevel 2000* only because landings and take offs prove to be *real* challenges.

For More Information

The Reiffer Brothers

<http://www.simmarket.com/online/courchevel>

Email: support@reiffer.de

SRP: \$14.95

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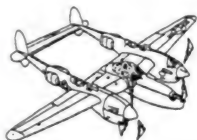
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Web Watch

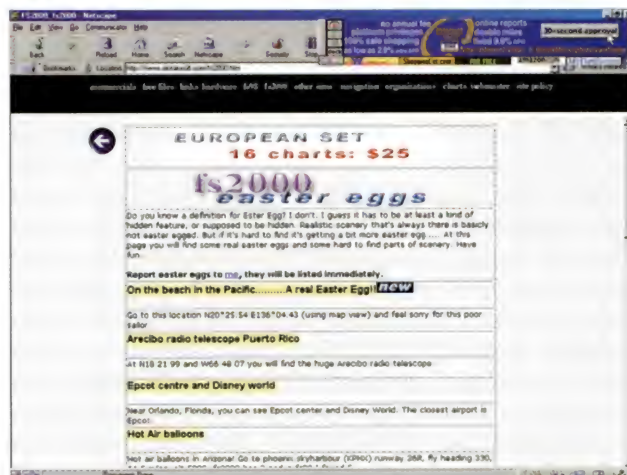
Internet Sites for Simmers

Today on our journey we will explore the FS2000's impact on the Internet with site related to FS2000. Normally I would save the best for last, but in this case, I can't wait to spread the news about one particular site. After looking through its contents for about two minutes, I immediately book-marked the main page.

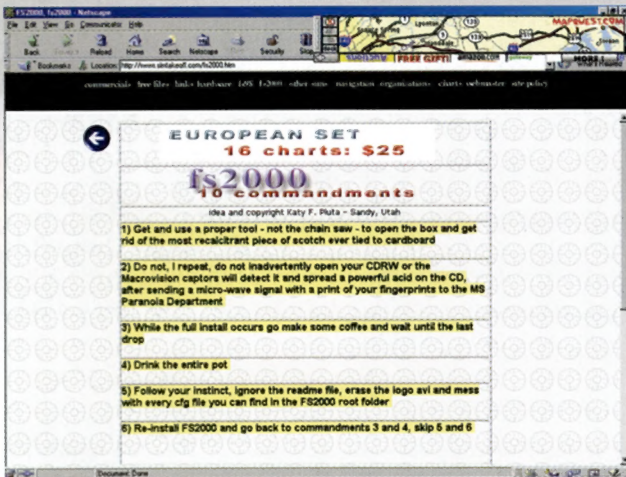
Log on and set your browser to <http://www.simtakeoff.com/fs2000.htm>. This site is set apart from most "Sim" sites by not focusing on downloads. Downloads can really be obtained anywhere by doing a search at your favorite search engine. This site gives you excellent information on FS200 in the form of Hints, Easter Eggs, Approach Plates, Enroute Charts and how to read them, Hardware issues and FS2000 Bugs.

The layout of the site is very easy to understand and you are not bogged down with a lot of graphics. This is an excellent place to learn all there is to know about Main boards/CPU's, video boards, joysticks/yokes and even multi-monitor displays!

If you are looking to update your system to better handle FS2000, stop by this site to get information on what's available and what is working the best with FS2000.



by Adam Howe



Our next stop, however short, brings us to the web-dreamers paradise: <http://flightsimmers.net>. This site offers a free web service to flight simmers! Through this site, you can get 35 Meg of hard drive space, a guestbook and more - all for free. This is a great place to stop if you are interested in Flight Simulation especially if you are looking to open your own FS related site. If you stop by this site, you will see a place to view current websites that are setup on www.flightsimmers.net. Through this, you can find all sorts of FS related site.

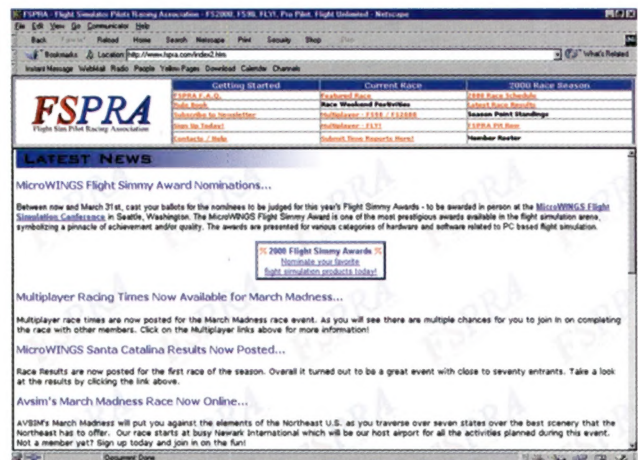
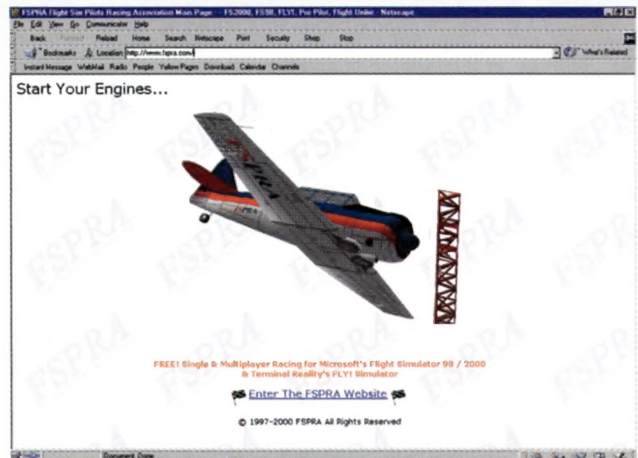


Looking to put your flying skills to the test, checkout <http://www.fspira.com/>. This site is setup for FS races. The site includes a news section to keep abreast of the latest information in the Flight Sim world and for all you novices, a rulebook to help get oriented to the "sport". Sign up for the newsletter to get the lowdown on all the latest events if you are interested. There is even a place to check the multiplayer FS98, FS2000 and FLY! race results. The available races show the legs of race and their distances. If and additional scenery (3rd

party scenery) is required it will be listed at the bottom of the pages. There are lists at the bottom of the pages that are separated by FS98, Fs2000 and FLY!

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No, its not quite time for a cup of coffee, but we will stop by the FSsafe anyway. Set your browser to: <http://www.fsSAFE.com> This site a lot of places to "sit", but it seemed to be under construction when I visited it. Some of the pages seemed incomplete or unavailable, but the layout is great and the information available to you is plentiful.

Web Watch

If you are looking for news, panels, scenery, aircraft, forums or just some cool files give this site a once over. If you are new to the FS world and want to look into what is available and how to install files, checkout the "Newbies" section. Like I said, some of the pages are missing or have bad links, but the premise is there for a great site - I suggest bookmarking it and stop by a few times. Drop them a note and let them know you were there.

The FSCafe along with few other sites, have AFX files available to be downloaded. AFX files those who are unfamiliar are files that Flight Shop of Aircraft Factory uses to construct aircraft. When you design a plane, you can "export" the plane into a file. That file has an extension of AFX (i.e. myplane.afx)

I hope you have enjoyed your tour of the Internet this time around. If you have any suggestions for a website to be reviewed in WebWatch weather it is your site or someone else's, feel free to drop me a line at: adam@ftmagazine.com.

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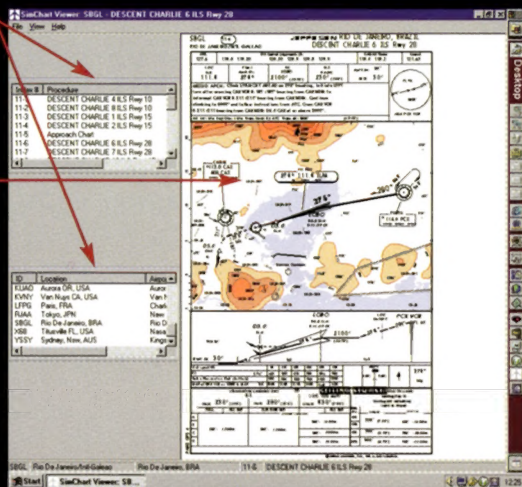
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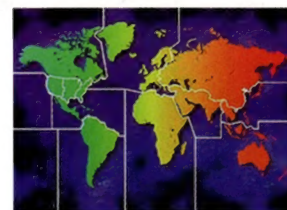
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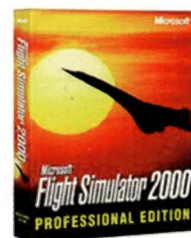
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